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ABSTRACT

The collection and compilation of occupational supply data from formal, organized training programs were investigated to identify instances of multiple counting and undercounting of labor supply. The study combined a literature review; interviews with 274 individuals in 10 states involved in data production and use at the state or local level; interviews with agency and institutional representatives at local, state, and federal levels; and observations in 60 local training institutions or agencies. Multiple counting was found to occur as a result of duplicate counting within an institution and between agencies. Undercounting resulted from failure to secure data on the output of proprietary schools, and from lack of reports on public schools' vocational programs not in the state plan and nonvocational programs producing trained individuals available for employment. (The report further describes the state reporting systems and the flow of data from the local institution to the federal level. Other findings are presented that deal with the human factors involved in the generation, collection, analysis, and use of occupational supply information. Recommendations are made for the improvement of supply data and the system. Appendixes include the literature review and an overview of federal laws and regulations pertaining to data collection and reporting.) (YLB)

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ESTIMATING OCCUPATIONAL SUPPLY INFORMATION FROM FEDERAL REPORTS: ISSUES AND CONCERNS

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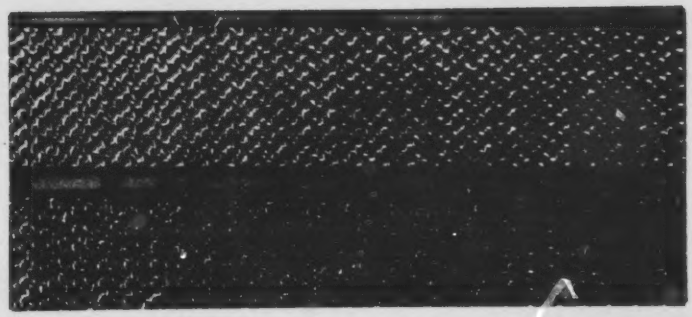

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FOREWORD

Occupational supply and demand data--that is data which show the number of workers needed and the number being trained for a specific job or job cluster--are essential for effective decisions regarding the initiation, continuation, or termination of training programs. If the state and nation are to be assured that the training provided is relevant to the needs of individuals and employers, accurate supply/demand projections are needed for use in program planning.

The project reported here has investigated the problems and causes of multiple counting and undercounting in the calculation of labor supply. This report offers recommendations that can assist states in more accurately estimating the number of trained workers that will be emerging from the formal, organized training programs operating in the state.

The National Center for Research in Vocational Education greatly appreciates the support of the National Occupational Information Coordinating Committee (NOICC) and the National Center for Education Statistics (NCES) in the funding of this study. NOICC and its counterparts in the states--the State Occupational Information Coordinating Committee (SOICC)--have been designated by the Congress as the agencies responsible for seeing that accurate and timely supply/demand information is available to decision makers at the state and local levels. This effort, along with other coordination activities, particularly the use of supply/demand information in decisions, can be strengthened by attention to the findings and recommendations of this report. A coordinated effort to meet the training needs of each state is necessary if the nation is to be most effectively served in this critical area.

The National Center is particularly indebted to the project staff, Dr. Bill Stevenson, Project Director, Sue Allen, Program Assistant, Patricia Fornash, Program Associate, Nellie Martin, Graduate Research Assistant, and Venita Rammell, Secretary. Recognition should also be given to Dr. N.L. McCaslin, Associate Director, Evaluation and Policy Division, and Dr. Floyd McKinney, Program Director for Evaluation Services.

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Finally, a note of appreciation is extended to Marilyn Orlando, Division Secretary, for her assistance in the completion of this report.

Robert E. Taylor
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in Vocational Education

EXECUTIVE SUMMARY

ESTIMATING OCCUPATIONAL SUPPLY INFORMATION FROM FEDERAL REPORTS: ISSUES AND CONCERNS

Introduction

Decision makers in vocational education at the state and local level need current, accurate, and relevant information upon which to make decisions about occupational program offerings. Foremost among these information needs is data on projected demand and supply of trained workers by job title or cluster. Although information on expected salaries (compared to nontrained employees), potential job advancement, necessity of the occupation to society, minimum hiring requirements and other information are important, the gap between anticipated demand and supply is critical in deciding program formulation, implementation, continuation, and termination.

Purpose of the Study

This study conducted by the National Center for Research in Vocational Education and sponsored by the National Occupational Information Coordinating Committee (NOICC) and the National Center for Education Statistics (NCES), investigated the collection and compilation of occupational supply data from formal, organized training programs.

The primary concern of the investigation was to identify instances of multiple counting (through two or more reporting systems), and undercounting (through no reporting system) of persons trained and available for employment. Two potentially serious issues associated with supply data exist and require study and documentation. First, there is a potential for multiple counting of students/clients served by more than one agency/program. Specifically, there is a potential for multiple counting between the following reporting systems: Vocational Education Data System (VEDS), Comprehensive Employment and Training Act (CETA), Rehabilitative Services Administration (RSA), and Higher Education General Information System (HEGIS). A second and equally important issue associated with estimating occupational supply concerns individuals who are being trained and are available for employment, but are not reported through any system and thus are not counted as supply. This was thought to occur most often in proprietary schools, vocational programs not reported and nonvocational programs in the public schools, and CBOs. This study was not designed to investigate any supply coming from outside the formal, organized training programs in the states.

Methodology

The study combined the following:

- o A review of the relevant literature including research reports, laws, regulations, and forms relating to the federal and state reporting systems
- o Interviews with 274 individuals in ten states involved in the production and use of data at the state or local level
- o Interviews and conferences with agency and institutional representatives at the local, state, and federal level
- o Observations in sixty local training institutions or agencies (secondary schools, community colleges technical institutes, and CETA Prime Sponsors)

Findings

The report presents findings relating to multiple counting occuring as a result of the following:

1. Duplicate counting within an institution and
2. Duplicate counting between agencies

The report also discusses under counting as a result of the following:

1. Failure to secure data on the output of proprietary schools
2. Lack of reports on public school's vocational programs not in the state plan and nonvocational programs producing individuals who are trained and available for employment

Some general statements based on a majority of states studied summarize the findings on multiple counting and undercounting.

- o Vocational education is the principal trainer for CETA clients, with some training being done by proprietary schools.
- o VEDS reports include those CETA clients who are in a regular vocational class, whereas CETA contracted classes are not generally reported through VEDS.
- o A relative small number of individuals receive support for skill training through RSA.
- o RSA refers the majority of its clients who need training to vocational education.

- Vocational education reports RSA trainees in VEDS.
- VEDS will include most RSA trainees.
- Community-based organizations (CBOs) do some training of CETA clients. The number receiving occupationally specific skill training is not significant in most state's supply calculations.
- Veterans Administration (VA) supports trainees in both vocational education and in proprietary schools.
- Vocational education reports through VEDS those VA clients receiving training.
- Data on VA clients trained in proprietary schools would have to come from VA or proprietary reports.
- Multiple counting occurs between VEDS report and HEGIS reports.
- HEGIS reports contain enrollments and numbers receiving certificates or diplomas.
- States are aware of, but only a few have used, Noncollegiate Postsecondary Survey (NCPS) data.
- Programs not traditionally considered vocational (industrial arts, typing, and so forth) were not found to be producing significant numbers of people trained and available for a specific occupation.
- Proprietary schools, in most states, make up the largest numbers of individuals trained but not included in supply calculations.

The report further describes the state reporting systems and the flow of data from the local institution to the federal level. Other findings are presented that deal with the human factors involved in the generation, collection, analysis, and use of occupational supply information.

Recommendations

The recommendations contained in the report may be summarized as follows:

1. Supply numbers should be based on number of trainees available for employment.

2. To secure data on proprietary schools, it is recommended that SOICCs do the mailing of the Noncollegiate Postsecondary Survey, receive the responses back from schools, record completion data, and send material on to NCES.

3. Based on state differences, major supply data sources should be: VEDS, CETA, and NCPS.

4. CETA reports should be modified to include the type of institution providing the training and whether training is on an individual referral or contracted class basis.

5. Every effort should be made to use social security numbers to identify every individual receiving training in any federal or state funded program.

6. Numbers of trainees not counted as a result of vocational programs which do not fill out federal reports, though not significant in most states, should be studied by the state agency responsible for calculating supply.

7. Programs not traditionally considered vocational (industrial arts, typing, and so forth) should be investigated to determine if they constitute a significant source of trainees not being reported.

8. At the federal level every effort should be exerted to establish one occupational coding system and one education-training program coding system. The NCES uniform reporting system will alleviate the problem to some extent.

9. SOICC Committees should have principal responsibility for the production of a report that matches occupational supply against occupational demand.

10. State procedures should be established to ensure involvement of, and feedback to, local providers of data.

11. Research should be conducted to identify ways to increase the use of supply/demand data in state and local program planning.

Finally, the report recommends a method of Analysis of Multiple Counting that should be used when there appears to be a probability of multiple reporting of individuals trained. The use of this analysis system is illustrated in the report.

Concluding Statement

Effective coordination can start with an information system that communicates with all of the providers and funders of training that grows into an organized cooperative program to meet the job preparation efforts of the state and nation. The information systems that can spark and guide this coordinated

effort need not be one system but if the several data mechanisms are to foster communication they must speak the same language. The implementation of uniformity of language, which seems so obvious and yet has proven to be so elusive, requires time, effort, and leadership at all levels--local, state, and national. This achievement of communication requires the elimination of barriers and the construction of bridges of cooperation.

CHAPTER I

RATIONALE AND INTRODUCTION

This study conducted by the National Center for Research in Vocational Education and sponsored by the National Occupational Information Coordinating Committee (NOICC) and the National Center for Education Statistics (NCES) investigated the collection and compilation of occupational supply data. This particular research was limited to that part of the occupational supply data that is representative of those individuals entering the labor market as a result of skill training obtained through a formal, organized setting. The major training providers in this situation are vocational education, proprietary schools, and to a limited extent, community-based organizations (CBOs). Funders of training are the Comprehensive Employment Training Act (CETA), Rehabilitation Services Administration (RSA), Vocational Education, Veterans Administration, and the Bureau of Indian Affairs.

The primary concern of the investigation was to identify instances of double or multiple counting (through two or more reporting systems), and undercounting (through no reporting system) of persons trained and available for employment. Each system, e.g., CETA and Vocational Education, must account for all of the participants it serves and include these individuals in their reporting system. The issue of multiple counting arises not because the reporting systems are in error, but occurs only when data from different systems are used in developing supply estimates. Similarly, the fact that some training programs are not included in any of the reporting systems does not inherently indicate a flaw in the reporting, but only that such training is outside of the purview of the existing systems. In short, this study is not intended to examine any possible shortcomings of existing reporting systems, but rather analyzes the problems that occur in the application of data from these systems for estimating supply. This research identifies needs and concerns as perceived by the principal actors in the ten states studied, as well as those needs and concerns observed by the researchers. This study is not designed to investigate any supply coming from outside the formal, organized training programs in the states.

Information for Decisions

Decision makers in occupational training at the state and local level need current, accurate, and relevant information upon which to make decisions about occupational program offerings. Foremost among these information needs is data on the

projected demand and supply of trained workers by job title or cluster. While expected salaries (compared to nontrained employees), potential job advancement, necessity of the occupation to society, minimum hiring requirements, and other information are important, the gap between anticipated demand and supply is critical in deciding program formulation, implementation, continuation, and termination.

Based on this need, a primary legislative charge of the Education Amendments of 1976 to the National Occupational Information Coordinating Committee (NOICC) and the State Occupational Information Coordinating Committees (SOICC) was the development and implementation of an Occupational Information System (OIS). The legislation further stipulated that OIS "shall include data on occupational demand and supply based on uniform definitions, standardized estimating procedures, and standardized occupational classifications." To initiate the OIS development process, several basic policy determinations were made. Among them was the policy that NOICC/SOICC would not become a primary data collection agency but rather, coordinate such efforts among its member agencies. Following this policy, NOICC/SOICC planned to utilize data and information from the following sources in developing occupational supply data:

1. Employment and Training Administration's data reporting systems, i.e., State and National Apprenticeship System (SNAPS), Employment Security Automated Reporting System (ESARS), Employment and Training programs reporting system, CETA, and Job Corps.

2. State Employment Security Agency programs, i.e., Employment Service (ES) and Unemployment Insurance Service (UIS).

3. Rehabilitation Services Administration's Case Service Reporting System (CSRS).

4. National Center for Education Statistic's data reporting systems, i.e., Vocational Education Data System (VEDS), Higher Education General Information Survey (HEGIS), and Noncollegiate Postsecondary Schools Survey (NCPS).

At the start of the research reported in this document two major issues and a number of questions were obvious to the researchers. Two potentially serious issues associated with the use of the above systems as the source of supply data may exist and require study and documentation. First, there is a potential for multiple counting of students/clients served by more than one agency/program. Specifically, there is a potential for multiple counting between the following reporting systems: VEDS,

CETA, RSA, HEGIS, and Job Corps. For example, are significant numbers of CETA participants attending public vocational institutions being reported both through VEDS and CETA? This issue may complicate attempts to estimate supply since these counts will duplicate those that will be reported through the CETA reporting system that is being implemented this year.

A second and equally important issue associated with estimating occupational supply concerns individuals who are being trained and available for employment but not reported through any system and thus not counted as supply. This may occur through the limiting of VEDS reporting to programs covered by the state plan, i.e., programs for which federal vocational education funding is provided. State plan coverage may vary significantly from state to state, especially in the postsecondary area, because of the organization and funding structure within a state. Another reason for undercounting may stem from the fact that some states are not obtaining data on proprietary schools. As a general rule, when developing procedures for estimating occupational supply, it is essential that all major sources of training be covered or, at least, that they be treated in a consistent manner.

Questions that must be answered about these two issues are as follows:

1. Under what organizational structures and state training and reporting conditions are significant multiple or undercounting problems likely to occur?

2. How may a state identify and account for sources of multiple counting or undercounting supply from institutional training programs?

3. What procedures should a state use to secure correct data if questions (1) and (2) indicate a significant problem exists in the present data?

4. What suggestions should be offered at the federal level for improving the quality of the supply data in an occupational information system?

Procedures for the Research

The procedures employed in the conduct of this study consisted of a review of the literature related to compilation of supply/demand data, collection and analysis of reporting forms, and a study of the laws and regulations pertaining to federal reporting systems. In addition, project staff spent two weeks in each of ten states interviewing MIS and administrative staff

of training agencies at the state and local level. A steering committee representative of federal and state agencies involved in occupational training and an advisory panel of specialists in the National Center for Research in Vocational Education assisted with direction of the study and review of the final report. More details on the methodology of the study may be found in chapter 2 of this report.

Organization of the Report

The next chapter of this report will present the methodology. This is followed by a chapter on the findings resulting from the state visits, and the reviews of the reporting systems. The last chapter includes the summary, conclusions, and recommendations. For details on related literature, and relevant federal laws the reader is referred to Appendix A and B of this report. Finally, a case study was written on each of the states included in the analysis. The individual state case study has been made available to the agency staff in that state for their use and is not included in this report.

CHAPTER II

METHODOLOGY

A series of activities were scheduled in completing this study. The activities included consultation with appropriate National Center staff, reviewing pertinent literature and documents, constructing conceptual framework, convening an external steering committee, visiting states, analyzing existing data base, analyzing reporting forms and instructions, and analyzing information using the case cluster method.

National Center Consulting Panel

A National Center Consulting Panel was selected to work with the staff on the project. The panel members were selected because of their background and expertise in the following areas: (1) state vocational management information systems, (2) CETA, (3) labor market data, (4) rehabilitation service agency, (5) community based organizations, and (6) community colleges. This "in-house" consulting panel reviewed the plans for the study, made recommendations for types of persons within certain agencies to be interviewed, and reviewed the draft report. The panel also provided the project staff with certain relevant pieces of literature to be incorporated into the study. Coinciding with the selection of the National Center Consulting Panel, the literature and document reviews were initiated.

Conceptual Framework

In order to understand the reporting systems and to analyze those systems for clues to improvements, it appeared to be reasonable to look at the laws and regulations pertaining to those systems, the people operating the systems, the substantative content of the systems, and how the people operating the systems interact with each other. This framework guided the course of the study and formed the base for the activities which followed.

The staff reviewed the laws which created the various agencies and the regulations of the agencies establishing a reporting system. Interviews conducted at the local and state level provided insights into the skills and the attitudes of the people operating and using the information systems. The substantative content of the systems was studied through the collection of reporting forms and completed reports. Conversations with local training staff and with local reporting people revealed much about the content of the reports. The interaction of the individuals operating the system was highly varied both within and between agencies. The "human factor" was found to be an important factor in determining both the quality of the data and the extent of its use.

Literature Review

The literature review was conducted to identify prior research in the area of labor supply reports for trained workers, to identify existing information relevant to the projects research questions, and to determine where additional information is needed to extend or modify current methods of gathering labor supply data on trained workers. (Appendix A.)

The literature review focused on labor supply reports, rather than the labor demand information. This decision was made because of (1) the focus of the study was labor supply information reporting systems and (2) the voluminous number of labor demand reports.

The literature review was initiated by a computerized search of two data bases: Educational Resources Information Center (ERIC) and Current Indexes to Journals in Education (CIJE). Other pertinent literature was suggested by NOICC staff members, the steering committee, and the National Center consulting panel.

External Steering Committee

The external steering committee represented diverse agencies involved in labor market information collection and use. (see Appendix D.) They were collaboratively selected by sponsor staff and project staff and were convened for three separate meetings at the NOICC office in Washington, D.C. At the first meeting of the steering committee the project staff provided an orientation to the project. The steering committee helped in determining areas where undercounting and multiple counting may be occurring, in identifying important issues for the study, and in providing project staff with information about training and reporting procedures in each of their agencies. At the second meeting the project staff gave an overview of their impressions of the states that had been visited to date. The steering committee members reacted to these impressions and recommended other information that should be acquired. At the last meeting of the steering committee, the project staff presented a draft of the final report for the committee's reactions. The steering committee offered ideas and suggestions to be incorporated into the final report.

Site and Interviewee Selection

In selecting the ten states to be used for in-depth examintion, consideration was given to urban/rural factors, data collection and reporting processes, governance structures, funding process, availability of CETA Prime Sponsors, existing written policies for submitting reports, and actual published reports of

data including supply/demand information. For this reason, the ten states to be surveyed were selected using a purposeful sampling procedure. The first step used in the site selection was to identify the appropriate variables as mentioned above that may lead to multiple or undercounts in supply. The final selection was coordinated with NOICC.

The following states were included in the study: (1) California, (2) Connecticut, (3) Florida, (4) Illinois, (5) Minnesota, (6) Missouri, (7) South Carolina, (8) Utah, (9) Virginia, and (10) Washington.

After selecting the states to be visited, project staff determined the criteria for local site school selection. In each state two secondary and two postsecondary schools were selected. The schools and the prime sponsors were to be located within a hundred mile radius from the state capital and within fifty miles from each other whenever possible. The secondary schools would include urban areas offering five or more vocational programs and rural areas with at least three vocational programs. The postsecondary institutions would be representative of both community colleges and vocational-technical schools. A school with a high percentage of disadvantaged was included in each state since students in these schools would most likely be funded from more than one service. The final selection of the local schools and prime sponsors was determined by the state liasion person after project staff discussed the selection criteria with them.

Approximately ten days were spent collecting information and data within each state. During this phase interviews were conducted with appropriate state and local administrators, management information specialists responsible for developing and reporting student data, and with the personnel responsible for reporting to the Rehabilitation Service Administration R-300 reporting system. Interviews were also to be conducted with appropriate personnel at two CETA Prime Sponsors in each state and with state CETA (Balance of State) Personnel. When the CETA regional office was located in the capitals of the states included in the project, staff visited those regional offices. (see figure 2.1.)

Position	Ten State Total
SOICC Director and Staff	18
State Vocational Education Director	10
State Vocational Education Planner	15
State Vocational Education MIS person	20
State Postsecondary Director	11
State Postsecondary MIS person	15
CETA Prime Sponsors	
Director	7
MIS	16
Training Director	7
CETA Balance of State	
Director	2
Planner	1
MIS	13
Training Director	0
RSA staff	12
Job Corps staff	3
Employers	15
Union personnel	9
Other personnel	18
CETA Regional MIS Staff	3
Proprietary Regulating Agency staff	8
Local Secondary Vocational Education Director	17
Local Secondary Vocational Education MIS person	15
Local Postsecondary Vocational Education Director	22
Local Postsecondary Vocational Education MIS person	16
TOTAL	274

Figure 2.1 Agency Staff Interviewed

Study Approaches

An adaptation of case study methodology was planned to gather information from the sample states. Information was collected using a case cluster method of qualitative case studies. A framework for this method was provided in "Applying the Logic of Sample Surveys to Qualitative Case Studies: The Case Cluster Method" (McClintock, Brannon, Moody, 1979). The case cluster method was chosen because it allowed (1) the definition, enumeration, and sampling of units of analysis with the case study; (2) the stratified sampling of data sources based on theoretical grounds and on features of the case, crossed with a stratified sampling of units of analysis; and (3) the creation of a quantitative data set consisting of standardized codes for variables pertaining to each unit of analysis. This allowed for a mixture of qualitative and quantitative data. By combining qualitative data from the case studies, quantitative data from the analysis sheet, and an existing data base, the project staff was able to triangulate findings using the case cluster method.

An interview guide and data analysis plan were developed. The interview guides were developed for all expected respondents. The data analysis plan included those variables that were felt to have some impact on data collection and quality. (see Appendix E.)

In order to accomplish the goals of the project, the staff used a management by objectives (MBO) method. Using this approach, with assistance and training by the project director, each staff member developed the goals and objectives for their area of responsibility.

Staff Training

A week of staff training was completed before beginning to collect data in the field. The project director and a consultant held workshops with staff on MBO and the case cluster method of qualitative case studies, respectively.

The data collection procedures were piloted by project staff and sample case studies were written. Staff talked with a variety of representatives in the State Education Department, SOICC, and local school MIS persons at the secondary and post-secondary level in the pilot state. Problems with the interview guides and with achieving researcher uniformity were reviewed and clarified by staff. With all the elements for the study in place, the project staff began to plan for the state visits.

Data Collection Procedures

Prior to the state visits a letter was sent to the state chamber of commerce, and the directors of commerce, community

affairs, economic development, and economic opportunity to request demographic information. A demographic overview was completed prior to each state visit. This included (1) geographic, (2) socio-economic, (3) education, and (4) economic information on each selected state site.

Vocational education directors and SOICC directors for each state were contacted to elicit their support for the project, and to ask for a liaison person to be appointed to help coordinate the activities in each state. Project staff assigned to a particular state contacted the appointed liaison person by phone and letter. The data for the visit, the persons to be interviewed, and the criteria for local site selection were discussed and interview schedules were set up. Each staff member had the opportunity to work with each of the other staff members, to help ensure interviewer uniformity.

An average of twenty-seven persons from each state were interviewed, resulting in 274 interviews. (figure 2.1.) A case study was written after all documents and interviews had been collected and reviewed in each state. The case studies then represented a composite picture of information about each state, based on interviews, observations, and documents. A draft copy of the case study was mailed to the SOICC director, and vocational MIS director in each state to ensure that the case study provided a clear picture of the information collected.

Specific information from interviews was recorded on the data analysis forms and was processed for analysis across states, respondent groups, local and state levels, and secondary and postsecondary levels. One final effort, an analysis of an existing data base on state education personnel was studied for greater insight into the state situation.

Assumptions

The following assumptions underlie the research strategy of the study and contribute to a framework for interpretation of the findings.

1. A potential exists for overlap and multiple counting students/clients served by more than one agency/program. The potential for overlap/multiple counting exists between the following reporting systems: CETA, RSA, Job Corps, and the VEDS, HEGIS, and Noncollegiate Postsecondary Surveys of NCES.

2. A potential exists for undercounting of students/clients. The potential occurs in programs in public schools not covered by the state vocational plan and in proprietary schools.

3. NOICC is not a primary data collection agency, it utilizes data and information from the Employment and Training Administration's data reporting systems, State Employment Security Agency programs, Rehabilitation Services Administration's Case Service Reporting System, and the National Center for Education Statistic's data reporting systems including Vocational Education Data System (VEDS).

4. Studying the "agencies" that are the primary data collectors will yield information relevant to multiple/undercounting of trained workers.

5. Although data collection, limitations of time, and funding prohibited visiting of all fifty states, careful selection of sites yielded information sufficient to indicate the types of problems that may be encountered when using data from existing reporting systems in estimating supply.

6. Respondents interviewed provided serious and honest answers that were representative of general views of issues and concerns held by educational leaders and training staffs.

Limitations

The following limitations affected the people of the investigation and are germane to the interpretation of report findings:

1. The site investigation was limited to ten states by constraints of time and funding.

2. The selection and use of an analysis plan that identified a limited number of factors expected to have an impact on over/undercounting may have affected findings. (These factors are shown in Appendix E.)

3. Investigation at the local level was limited to two secondary and postsecondary schools, and two local CETA prime sponsors.

4. The great variation in data collection methods between and within states limited the amount of generalizable information.

5. Some questions investigated were limited to the knowledge of the persons identified and interviewed by the project staff.

6. The findings in the report are conclusions drawn from the state agencies and institutions included in the study. These conclusions should be tested again and again in the every changing contest of the training systems, participants, and agency linkages in place in each state. The study will identify the problems that are most likely to occur, and indicate the magnitude of problems that might occur.

CHAPTER III

FINDINGS

Introduction

This study was designed to find ways to improve the quality of the education and training portion of the supply data that goes into the occupational information system (OIS). Administrators need to know not only the number of new workers who will be needed in an occupation but also the number being trained to fill those jobs. The project reported here included input from federal agencies involved in providing training and collecting training data. A description of each of the repoting systems is presented later in this chapter. Training and funding agencies in ten states were studied to gain an understanding of the reporting systems in operation. Finally twenty secondary schools, twenty community colleges or technical institutes, and thirty CETA Prime Sponsors and Balance of State units were studied to more fully understand what is reported and how the system works.

Project staff at the conclusion of this study have a distinct impression of three separate worlds--federal, state, and local--with persons in each fully believing they understand and communicate with the other when in reality images of each held by the other are vague and messages garbled. Local officials feel a heavy data burden and do not seem to understand the need for or use of the data. States are caught between local reluctance to report and expanding data expectations at the state and federal level. Federal agencies construct instruments and write definitions only to be met with a stated need for "clearer instructions and uniform definitions." Quality and use of data are in danger of being shunted aside by the struggle to comply.

The problem of multiple counting only appears when data from two reporting systems is combined. Each system, designed to provide data required by a single agency, may be effectively meeting that need, whereas if combined with another report could result in multiple counting of certain individuals. The solution lies not in causing either agency to reduce the numbers reported but in designing a method of determining the overlap and accounting for it in the final supply calculations.

The SOICCs are a new attempt to solve this coordination and data use problem. With no turf to protect, with no traditions to limit, and with administration by the agencies to be coordinated SOICC has an opportunity to start the communication so essential to effective cooperation.

This chapter presents the finding of this study in terms of (1) problems and causes of multiple counting of trainees associated with using data from the various reporting systems to estimate supply, (2) problems and causes of undercounting of trainees and the effect on calculating supply, and (3) a description of how the reporting systems operate. As will be obvious to the reader, there are many independent actors in this vast arena with their own needs and their individual perceptions of the whole. This chapter should be useful in getting a better picture of the whole as well as providing clues to solving the problems inherent in calculating total supply data within a state or area.

Multiple Counting

Multiple counting occurs under two distinct and different circumstances.

1. When an individual is in two training programs in a single institution (welding and auto mechanics) and is reported as prepared and available for employment in both occupations

2. When an individual in training is reported through two reporting systems (CETA and VEDS), both of which are used in calculating supply

Duplicate Counting Within an Institution

The first instance of duplicate counting usually occurs when one student within a single institution or agency is enrolled and reported in two programs (an auto mechanics student taking a welding class). This problem can usually be most efficiently corrected by the training institution. Since students are required to state an occupational objective the basic rule should be only to report the student as trained or preparing for that objective. Where no occupational objective is indicated it will be necessary to determine where the greatest concentration of work has occurred.

The most efficient way to identify students participating in more than one occupational training program is through the use of social security numbers. The computer can quickly identify duplicate social security numbers and the student's name can be removed from the supplemental class listing. This system can be implemented at the state level.

Manual matching at the local level either by name or social security number is an alternative where computerization is not in effect. Since VEDS requires an unduplicated count of vocational students, most state vocational departments have developed methods to accomplish this. In the states studied in this

project estimates or actual counts of duplicate enrollments varied from a low of 10 percent to as high as 50 percent. Those responsible for determining supply should use unduplicated counts or at least make some adjustment to account for this factor.

Decisions on how best to eliminate duplicate reporting as discussed above depend heavily on whether or not the state has an individual student accounting system (ISAS). A state ISAS means that the state received a report from its local institutions on each individual participating in vocational education. This report usually is submitted at the beginning of training and includes information such as age, sex, race, handicaps, program, and occupational objective. Computerization allows the state to handle the mass of information on all individuals receiving training by having individual identification numbers such as Social Security.

States not having an individual accounting system receive reports on total numbers enrolled in each program. This system provides for much less flexibility in the analysis of student data and greater dependence on the local institutions to eliminate duplication between vocational programs.

Half of the ten states studied in this project have an ISAS and half are recording enrollments by total program. Differences in duplicate or double counting were not observable between these two systems, but methods of avoiding duplicate and multiple counting will of necessity be different for states using the ISAS or total class reporting system. Unduplication either between classes or between training and funding agencies would be possible at the state level with individual student records that have a social security number associated with each trainee. This unduplication of count would have to be carried out at the local level in states not having an ISAS.

Figure 3.1 summarizes the individual state vocational education system as it relates to how student data is reported from local schools to the state and the method of unduplicating student counts within the institution.

Multiple Counting Between Agencies

The occurrence of multiple counting between agencies is more difficult to ascertain and probably more significant in its effect on supply figures. This multiple counting occurs when an individual is being trained by one agency and that training is being funded and reported by one or more other agencies. As has been mentioned earlier, classroom skill training is generally provided by vocational education (comprehensive high schools,

State	1	2	3	4	5
Reports used or planned for use for supply report	VEDS CETA Postsecondary Non-collegiate Survey (NCPS) HEGIS (possibly)	VEDS NCPS/2nd report include CETA RSA HEGIS	VEDS HEGIS NCPS CETA Defense Dept. data SNAPS/2nd report RSA, Job Corp	VEDS CETA SNAPS HEGIS NCPS RSA	HEGIS CETA VEDS/2nd report Job Corp
Methods used to unduplicate report	Only use CETA students not trained by vocational education	No system	Hand-check data for accuracy and to eliminate double counting	Identify source of funder and trainer of students	No system

	6	7	8	9-10	
	VEDS (Secondary) HEGIS CETA Expanded NCPS Report Job Corp	VEDS HEGIS RSA Job Corp CETA Military NCPS SNAPS Employment Security	VEDS CETA	These states are establishing a network of interrelated agency data systems.	
	Exclude VED (postsecondary, but footnote if VEDS-HEGIS differ greatly, only use CETA class summary data. RSA excluded since all training sub-contracted.	No system	May use Social Security numbers		

Figure 3.1

Reports Used to Calculate Supply by SOICC

technical schools and institutes, and community colleges), proprietary schools, and to some extent community-based organizations. Those entities that provide funds for training are CETA, RSA, State Board for Vocational Education, Veteran's Administration, and Bureau of Indian Affairs. The major areas of potential duplicate counting that might inflate supply data appear to be between the following:

Vocational Education (VEDS) and CETA
Vocational Education (VEDS) and RSA
Vocational Education (VEDS) and HEGIS
Proprietary Schools (NCPS) and CETA

The funding of training programs and support for individuals in training come from many sources as illustrated in Table 3.1. Administrators interviewed about multiple agency funding identified several sources of funds.

Table 3.1

Percent Indicating Sources of Funds for Programs

Training Agencies	Sources of Funds					
	CETA	BEOG	Rehab.	VETS	WIN	Other
Local P-Sec.	95	50	77	77	23	23 (n = 22)
Local Sec.	70	8	13	8	4	13 (n = 22)
CETA	100	16	19	19	16	10 (n = 19)
State Sec.	100	3	34	19	3	0 (n = 14)
State P-Sec.	100	31	56	56	25	13 (n = 13)

Major funding sources cited by the local postsecondary school interviewees were CETA, Rehabilitation, and VETS. Local secondary school respondents noted CETA as the major funding source. Eighty percent of CETA staff reported their clients received funds from another source in addition to CETA. All state postsecondary and secondary vocational education administrators reported CETA as a funding source. When state and local administrators and MIS directors were asked to estimate what percentage of the students were funded by more than one agency, four of

five reported between 0 and 25 percent. Most interviewees reported that if students received funds from more than one source they would be reported more than once. Interviewees said that these reports would be sent to a variety of agencies.

Multiple reporting between VEDS and CETA. The multiple reporting of students appears to happen in greater numbers in the VEDS and CETA reports than elsewhere. This is based on the facts that vocational education programs are the major trainer for CETA clients, a large portion of CETA clients are included in the VEDS report, CETA clients are not identified separately in the VEDS reports, CETA reports do not identify clients trained in public schools, and both the VEDS report and the CETA reports are available for inclusion in the supply calculations. In the ten states studied it was reported that vocational education provides training for approximately 75 percent of all CETA clients receiving skill training. A few exceptions were noted in that CETA Prime Sponsors in one state reported 65 percent of training done by community-based organizations (CBOs) whereas in another state CETA reported that proprietary schools train 35 percent of their clients. The majority of the Prime Soonsors and Balance of State operations reported that from 80 percent to 100 percent of their referrals to vocational education are on an individual basis rather than contracted classes. Two Prime Sponsors reported a different arrangement, indicating that 60 percent and 80 percent of their clients received skill training through contracted classes. Thus the potential for picking up the same individual twice (once through the CETA report and once through VEDS) is a strong probability if both reports are used to calculate supply.

The development of a process for accurately estimating the supply and demand of trained workers requires a great deal of study and work, however the analysis of the states' reporting systems in this study shows that eight of the ten states are or plan to report occupational supply and demand data. Two of the states will develop a network of agencies to provide data and information at the time decisions are being considered. All of the eight states developing supply/demand data report that they use both CETA and VEDS reports in their calculations. One state uses only total class data from CETA and another reduces the CETA report by the number of CETA trainees reported by vocational education. The other six states using both CETA and VEDS reports did not identify a method of reducing the multiple counting.

All ten states indicated that CETA clients in regular vocational classes are included in the VEDS report. States do not report those individuals trained in a contracted class supported fully by CETA funds. The VEDS instructions state that all students in a program supported by VEA funds (State Plan program) should be included in the VEDS report. It appears that states

are correct in reporting CETA individual referrals and if any vocational education resources (buildings, equipment, teachers) are involved in CETA contracted classes these should also be contained in the VEDS report. In nine of the ten states CETA officials indicated that individual referrals made up the majority of the training done by vocational education and that the number in contracted classes is declining. This information indicates that the agency or individual responsible for estimating supply should (1) use only CETA contracted class reports, or (2) reduce the numbers reported by vocational education to reflect individual CETA trainees.

Multiple reporting between VEDS and RSA. Reports from Rehabilitation Services Administration (RSA) and VEDS is another potential source of multiple counting. Vocational education is the major trainer for RSA clients who need skill training in preparation for employment. These RSA referrals to vocational education are included in the VEDS report. Only two states out of the ten visited indicated that they will be using the RSA report in calculating supply. Since RSA staff interviewed in the ten states indicated that vocational education does practically all of the skill training for their clients, and since vocational education reports all RSA clients in VEDS it can be concluded that VEDS includes most if not all RSA trainees. Except where unusual circumstances exist such as a major training effort outside vocational education the RSA report can be excluded from those used to secure supply data.

Multiple reporting between VEDS and HEGIS. VEDS and HEGIS will report many of the same people trained because both report postsecondary students. Both reports list individuals receiving vocational training at the postsecondary level--VEDS reports the number enrolled and those completing approved vocational programs, whereas while HEGIS includes all those receiving a diploma or certificate. Both reports cover community colleges and two-year programs in four-year institutions. The method of analysis of multiple counting outlined in the recommendations chapter of this report gives a procedure that can be used to determine which or what part of these two reports should be used in a particular state.

To review, this section has presented an overview and specific details of the problem of multiple counting that occurs because an individual is included in two reports. The overlap in reporting between VEDS, CETA, RSA, and HEGIS is discussed and findings resulting from state studies were presented. Specific procedures for eliminating multiple counting are presented in chapter 4.

Undercounting

Supply estimates showing individuals trained and available for employment may be underestimated by failure to secure data

or by receipt of only partial data from all training entities. If significant numbers of people are being trained and not counted the reported supply could create a false picture of training needs. For valid decisions about training programs it is essential that the data that form the basis for those decisions be as complete as possible.

In the states included in the study there are several instances where parts of the supply data may not be readily available. In several states proprietary schools train relatively large numbers of students who are not reported through any state system. Some public schools, at both the secondary and postsecondary levels, are training individuals for jobs who are not reported through any system. Training done by CBO's usually is not reported unless through the agency supporting the trainee. These three potential causes of undercounting are discussed in more detail in the remainder of this section.

Proprietary Schools

Most of the persons interviewed in the states felt that the largest number of people being trained but not included in any state reporting system occured in the proprietary schools. Numbers mentioned by states ranged from a few hundred to over sixty thousand enrolled in these institutions. Two of the states in the study have no regulations governing proprietary schools. The remainder of the states have regulatory agencies for proprietary schools but do not collect data by occupation. Of the ten states studied, six do not use proprietary data in calculating supply whereas three use the Noncollegiate Postsecondary Survey (NCPS) data. Some proprietary schools are very resistant to any regulation according to some of the individuals interviewed.

The one instance in which proprietary school reporting seems to be fairly consistent is in the reports made to the Veterans Administration. This is of course, prompted by the requirements of the VA for follow-up data for those programs training veterans. This reporting requirement affect as many as 50 percent of the programs in some proprietary schools. If the VA reduces its follow-up requirements this source of data will cease to exist.

There are several alternative approaches that might prove effective in getting supply data from proprietary schools. The Noncollegiate Postsecondary Survey (NCPS) conducted by the National Center for Education Statistics (NCES) collects data from proprietary schools. A short form is sent to all of the schools for which addresses are available. A 10 percent survey based on a national sample collects additional information. Both forms provide enrollment and completion data by program, however, no follow-up data are collected. NCES uses SOICC to update the

school list and encourages them to mail the questionnaires. SOICCs can have long forms sent to all schools by paying the additional mailing cost.

Several states have conducted surveys to collect completion data from proprietary schools. Most proprietary school operators indicated a willingness to provide this information to a responsible state agency such as SOICC. In a few instances proprietary school representatives refused an interview with the project team indicating that they would not provide any information regarding their operation. Some proprietary representatives took the position that since they were not operating on public funds they were under no obligation to base program decisions on supply/demand information. Other schools took the position that supply/demand data would be effectively used in decisions relating to program offerings.

At least one proprietary school studied, publishes a list of completers by program which could be included in calculating the pool of trained workers for the occupations involved. Interviewees in several states indicated that in their opinion a law was needed which requires proprietary schools to report enrollment, completions, and placement by occupation (program) to some designated state agency.

Undercounting in Public Schools

Another instance of possible undercounting is in programs in the public schools which are producing people available for placement in a specific occupation but not reported through any system. Opinions as to the importance of this possibility were widely varied within the states studied. Generally it was felt by many state leaders that there were significant numbers being trained at the local level that were not being reported. On the other hand most of those at the local level stated that all individuals receiving occupationally specific skill training were being reported. Instances were mentioned where a few individuals from non-reported programs might be considered prepared for a specific occupation but numbers were so low as to be unimportant to total supply.

Secondary level. In secondary education one state reports only on those programs receiving federal vocational funds while in the other nine states programs receiving state or federal funds are reported. In the state reporting only federally funded programs only one small secondary school was eliminated from the list of vocational programs. In a state using this reporting policy those calculating supply/demand should carefully investigate the number of vocational programs not being reported. In states requiring reporting for both state and federally funded programs the undercounting of vocational program trainees should not be a problem.

Some industrial arts or business programs do have students who go into a related occupation. Occurrence of this is limited in numbers and sporadic except in a few isolated instances. State investigations of this practice have generally not found significant numbers consistently being placed in jobs related to training.

Postsecondary level. At the postsecondary level in the states studied no appreciable number of trainees are identified that were not being reported. Generally, administrators of community colleges and technical institutes stated that all programs preparing new workers were being reported. Many schools providing short-term, single-skill training are not reporting those programs; however, it was felt that new workers available for employment were not coming from these programs. Calculators of supply/demand should be cautioned that in some states a strong resistance to reporting to the State Board for Vocational Education has resulted in no VEDS report of any postsecondary training. The HEGIS report on degrees and other formal awards conferred might serve as an acceptable alternative in some states. Only full investigation of the situation in a specific state can determine where significant undercounting may be occurring.

This section discusses situations in which persons may be prepared for and entering the work force but not reported through any system. Recommendations on how best to account for these omissions are contained in the following chapter.

Other findings which affect the improvement and use of supply/demand data are discussed in the remainder of this chapter.

Description of State Reporting Systems

The State Occupational Information Coordinating Committees have the responsibility to coordinate the necessary resources to develop and implement an occupational information system (Appendix B). The states included in this study have developed different operational alternatives to satisfy this charge. Four of the SOICCs visited are now producing a labor supply/demand report, three of these are contracting with another agency for the report, another four SOICCs are in the development stage of producing the first supply/demand report for their state, and two other SOICCs are establishing a network of interrelated agency data systems.

All eight of the states in which a labor supply report is produced or planned stated that CETA data and VEDS data are included in the reports. Only two of the SOICC's indicated that they only include the CETA data on clients not reported by vocational education. Eighty-eight percent of the reports include HEGIS data and 75 percent include NCPS data. In only one instance was an expanded NCPS survey used to secure more indepth data from proprietary schools. Fifty percent of the reports include RSA and Job Corps data, 38 percent included SNAPS and 25 percent included defense data. Only two states report that all eight data bases are used or being considered to be used in producing their labor supply report.

In order to better understand the reports that are being used each of the major data sources and how data are collected will be discussed.

Vocational Education Data System (Secondary)

Three states reported that they are collecting data only to complete the VEDS report, no additional student data is collected. All states reported that they would be including individual CETA clients in the VEDS report. Two states reported receiving a MIS report from CETA indicating the number of CETA clients trained by vocational education. Two states reported that vocational education would not be including contracted CETA classes in the VEDS report. None of the vocational education respondents indicated they could identify individual vocational rehabilitation clients. Most states indicated these instances of duplicate counting would be negligible because of small numbers and the fact that eight of the ten states do not use RSA data in estimating supply.

States reported using various methods to avoid duplicate counting on the VEDS report. Methods included identification of each student by social security number or student number, using a fiscal auditing method, and avoiding multiple counting by staff instruction and training. Two states reported that they had no formal system to avoid duplicate counting in the VEDS report (figure 3.2).

The secondary vocational education data flow chart represents the various ways that data flowed in the ten states visited (figure 3.3). States mail information forms and instructions from the state MIS to the local schools to be filled out. Other systems collect information on students at the local level and send this information in individual or aggregrated form to the state MIS.

	STATE/LEVEL	STUDENT DATA: LOCAL TO STATE	METHOD OF UNDUPLICATING COUNT WITHIN INSTITUTION
(1)	Secondary	Aggregated	Fiscal Auditing
	Postsecondary	Individualized	Social Security Number
(2)	Secondary	Individualized	Social Security Number
	Postsecondary	Individualized	Social Security Number
(3)	Secondary	Aggregated	Staff Instruction Individual Student Number (Local)
	Postsecondary	Individualized Aggregated (VEDS)	Individual Student File
(4)	Secondary	Individualized	Teacher Check
	Postsecondary	Individualized	Social Security Number
(5)	Secondary	Aggregated-enrollment Individualized-follow-up	Instructions to Teacher
	Postsecondary	Aggregated	Social Security Number (Local)
(6)	Secondary	Aggregated	Internal Checks Adjust by Percentage
	Postsecondary	Aggregated	Individual Checks
(7)	Secondary	Aggregated	Individual Checks (Local)
	Postsecondary	Individualized	None
(8)	Secondary	Individualized-follow-up Aggregated-Other	Individual Checks (Local)
	Postsecondary	Aggregated	Report Unduplicated to State

Figure 3.2
Individual State Vocational Education Reporting Systems

	STATE/LEVEL	STUDENT DATA: LOCAL TO STATE	METHOD OF UNDUPLICATING COUNT WITHIN INSTITUTION
	Secondary	Aggregated	None
(9)	Postsecondary	Individualized	None
	Secondary	Individualized	None
(10)	Postsecondary	Individualized	None

Figure 3.2 Continued

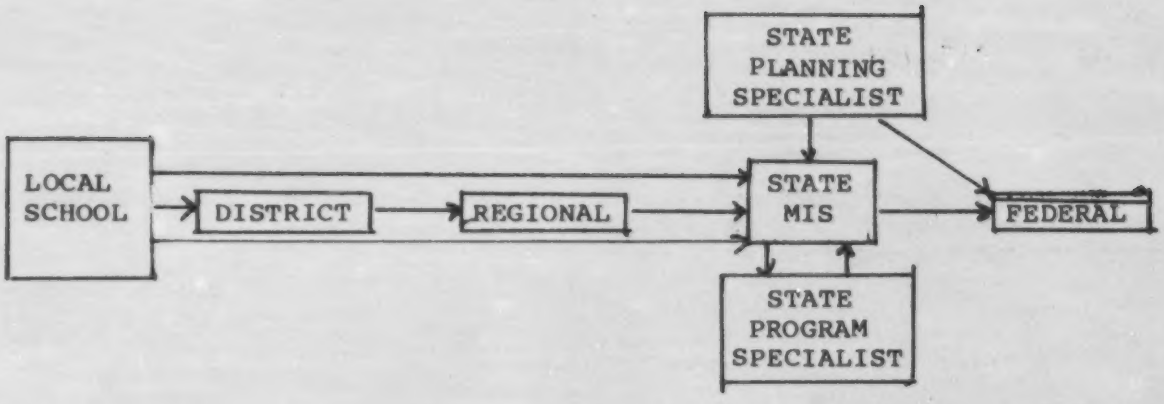

Figure 3.3 Secondary Vocational Data Flow

The local school assigns someone the responsibility of collecting the data (Figure 3.4). In some cases the student fills out the record and this is placed directly on-line. This allows both the regional and state offices to have access to the data at the same time. In the instance where an area vocational school is involved; data on each students is returned to the principal at the student's home high school. It should be stated again that data can be individual student, class, program, school, district, regional based, or aggregated at each level depending on the system used.

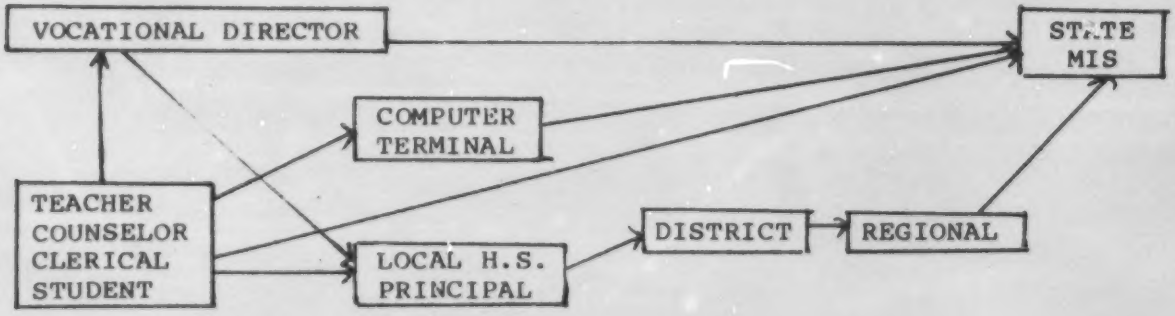

Figure 3.4 Local Secondary Vocational Data Flow

Once the data reach the state level they are often checked by sending them to each state program specialist or back to the local person if there are unanswered question about the data.

At the state level, data are received either in individual or aggregated form, duplicated or unduplicated, and methods for completing the federal reports are based on each state's system for aggregating unduplicated data.

Postsecondary Vocational Education Data Systems (VEDS/HEGIS)

Staff observations in the field found postsecondary vocational education data flow to be much less complicated than the secondary vocational education data flow (Figure 3.5).

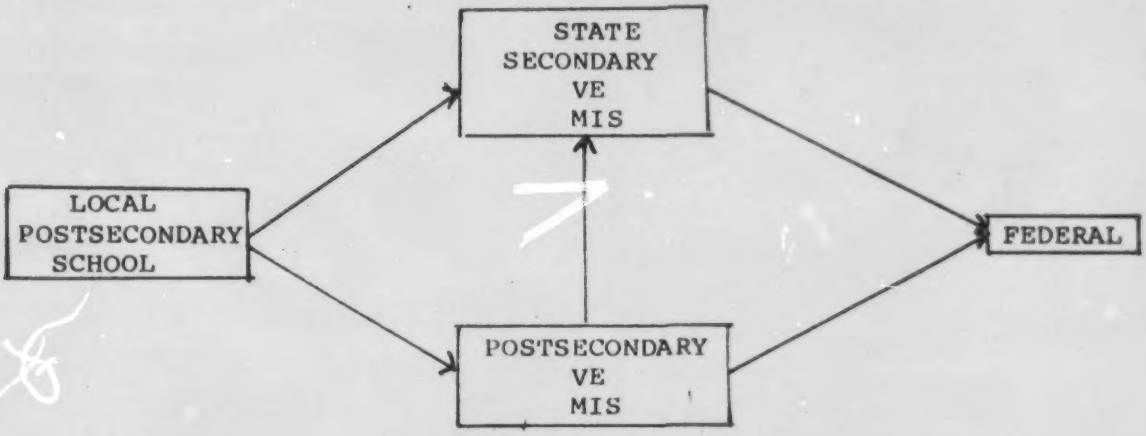

Figure 3.5 VEDS Postsecondary Data Flow

Data could be collected by anyone given that responsibility but in most cases the postsecondary institution had a person in charge of MIS or research who is responsible for data collection and reporting. Most states included in the study have a separate reporting system for the VEDS and HEGIS data. Only one state reported a system where the data is reported on one form and the VEDS and HEGIS are pulled from it.

Most states report an automated system for the VEDS data. Most postsecondary institutions place data on computers at the institution. The tapes are then sent to the state MIS or it has been placed directly on-line at the institution.

Vocational Data Systems (Postsecondary)

The HEGIS report in all but one state is a separate report. All but two states report that different agencies in the state have the responsibility for HEGIS and VEDS. No steps are taken within the states to unduplicate these two reports.

HEGIS data in most instances are collected manually. These data are generally the responsibility of a Board of Higher Education. The HEGIS forms are usually mailed from the Board of Higher Education to the person responsible for the data at each institution. The forms are filled out and returned to the Board or sent directly to NCES (Figure 3.6).

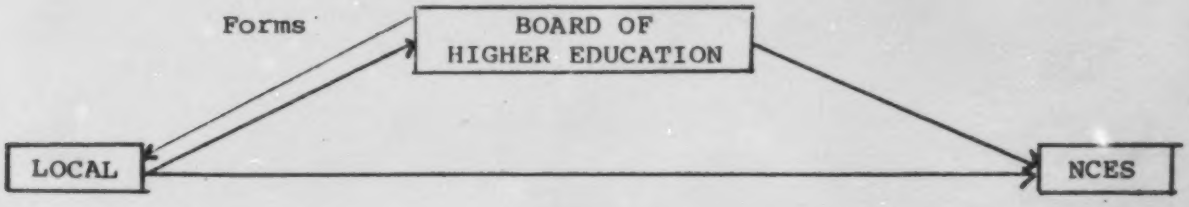

Figure 3.6 Postsecondary Data Flow

Most labor supply reports contain data from VEDS and HEGIS. This represents a large double count of trained workers unless some system is used to unduplicate. Exceptions did occur, one labor supply report only contained VEDS and another used only the secondary VEDS data, and the HEGIS, but in most cases multiple counting is happening.

CETA Data Reporting System

CETA contracts for training through many different agencies. In most instances the major portion of training is done by vocational education (Figure 3.7). Only two agencies reported that they identify these students and send a report to vocational education monthly. In most states, both the VEDS and CETA report is used to produce the labor supply report. This represents in most states a large double count. Most CETA agencies can identify the students but do not have the data system presently designed to be able to access this information.

Data are sent by the contractors by program in aggregated form, to the prime sponsor MIS, but individual records on participants is the method most widely used by CETA agencies interviewed. The majority of the agencies have computer based systems for record keeping (Figure 3.8).

The following chart shows the data reported by the CETA agencies visited in each state.

STATE AGENCIES		Estimate of Training Providers	Data System Designed to Identify Training Provided
(1)	Prime Sponsor	33% public vocational education 67% proprietary schools	No
	Balance of State (BOS)	no estimate	No
(2)	Prime Sponsor (2)	95% public vocational education	No
	BOS	95% public vocational education	No
(3)	Prime Sponsor (2)	35% public secondary vocational education 65% community-based organization (CBO)	Yes, report to vocational education
	BOS	35% public postsecondary vocational education 65% CBO	No
(4)	Prime Sponsor (a) (b)	Most contracted with public vocational education 55% public secondary vocational education 10% public postsecondary vocational education 35% proprietary schools	No
	BOS	80% public postsecondary and CBOs 20% public secondary proprietary/skills context	Yes, but not identified
(5)	Prime Sponsor (2)	majority by public secondary/postsecondary vocational education	Yes, but not identified
	BOS	majority by public secondary/postsecondary vocational education	Yes, but not identified
(6)	Prime Sponsor (2)	60% CETA 20% proprietary schools 10% public vocational education 10% CBO	Yes, report sent to vocational education
	BOS	60% public vocational education 30% proprietary schools 5% CBO	Yes, but not identified

Figure 3.7

Estimate of Training Provided by Agencies to CETA Participants
Data System Designed to Identify Providers

STATE/AGENCIES		Estimate of Training Providers	Data System Designed to Identify Training Provided
(7)	Prime Sponsor (2)	mostly public postsecondary vocational education	Yes
	BOS	mostly public postsecondary vocational education	Yes
(8)	Prime Sponsor (2)	no estimate	Yes, but very difficult (hand calculator)
	BOS	no estimate	No
(9)	Prime Sponsor (2)	50% public vocational education 50% local contractors 90-100% skill training vocational education	Yes, but don't identify
	BOS	50% public vocational education 50% local contractors 90-100% skill training vocational education	Yes
(10)	Prime Sponsor (2)	mostly public vocational education small amount proprietary school (only where program not offered by vocational education)	Yes, but don't identify
	BOS	mostly public vocational education small amount proprietary school (only where program not offered by vocational education)	Yes, but don't identify

Figure 3.7, continued

Figure 3.8 CETA Data Flow

Summary of Perceptions of Reporting System Factors

The following tables indicate responses of individuals at the state and local level, who have responsibility for reporting data on individuals trained. Responses relate to factors thought to be important in determining accuracy and completness of data. Lines and columns in the following tables do not add to 100 because more than one answer per interviewee is possible and because of rounding.

Table 3.2

Percent Indicating Responsibility for Reporting Data on Individuals Trained

Training Agencies	Teach/Couns.	Stdnts.	Adminis.	Clerical	Other
Local P-sec.	29	15	69	0	15 (n=16)
Local Sec.	66	13	67	17	4 (n=24)
CETA	43	0	42	13	23 (n=31)
State Sec.	29	3	34	3	6 (n=32)
State P-sec.	13	6	63	13	31 (n=16)

The local secondary respondents report that 67 percent of the responsibility for reporting falls to the teachers and counselors, while only 29 percent of the teachers and counselors at the postsecondary level had this responsibility. The state level staff reported a much lower percentage of teachers and counselors being responsible for this task. Only a small percentage of respondents report that students and clerical staff have these responsibilities.

Other factors having an impact on the flow of data are the amount of pressure and the amount of control on the persons responsible for the reporting. The respondents reported the following:

Table 3.3

Percent Indicating Amount of Pressure to do Accurate and Complete Reporting

Training Agencies	Low	2	3	4	High
Local P-Sec.	20	4	12	44	16
Local Sec.	21	4	17	29	29
CETA	11	4	14	18	54
State Sec.	13	0	17	57	13
State P-Sec.	15	0	8	46	31

(n = 113)

Of the 113 respondents who were asked to rate the amount of pressure they felt to do accurate and complete reporting 77 percent of the state postsecondary personnel felt highly pressured, and 60 percent of their local counterparts also felt highly pressured. The 72 percent of the CETA respondents also felt high pressure to do accurate reporting.

At the local secondary level, 58 percent felt a lot of pressure to do complete and accurate reporting and 25 percent felt only little pressure. At the state level 70 percent of the secondary respondents felt highly pressured to do accurate reporting.

Table 3.4

Percent Indicating Degree of Control Placed on Local School for Reporting

Training Agencies	Low	2	3	4	High
Local P-Sec.	25	0	17	17	42
Local Sec.	17	0	50	17	17
CETA	0	11	0	33	56
State Sec.	5	16	16	42	21
State P-Sec.	20	10	30	30	10

Eighty-nine percent of CETA respondents feel a high degree of control is placed on them to do accurate and complete reporting. At the local level, 58 percent of the postsecondary representatives felt more control than the secondary representatives at 33 percent to do accurate and complete reporting. A reversal of this was shown at the state level. Of the state secondary representatives interviewed, 63 percent felt that control was exerted on them to do accurate and complete reporting and 40 percent of the state postsecondary personnel interviewed felt that same degree of control.

Table 3.5

Percent of Administrators and MIS Personnel Indicating Degree of Administrators and MIS Influence in Securing Reports

	Low	2	3	4	High
Administrators	11	5	27	30	27
MIS Personnel	19	10	19	29	24

A high percentage of training administrators and MIS staff feel that they can exert a strong influence in getting reports from local training institutions.

Table 3.6

Percent of Training Agencies Indicating
Factors Influencing Control on Local School Reporting

Training Agencies	Laws/Regs.	Funding	Persuasion	Other
Local P-Sec.	38	73	27	0
Local Sec.	30	79	21	13
CETA	18	32	0	0
State Sec.	21	34	13	3
State P-Sec.	11	44	19	0

At the local level, funding is the most prevalent means of inducing schools to submit reports. Laws and regulations are also a factor in local school reporting. At the state level, funding again is the basic control agent with laws and regulations next in importance at the secondary level and persuasion next in importance at the state postsecondary level.

Another factor which has some impact on data flow is amount of MIS automation, as described in the following table:

Table 3.7

Percent Indicating Degree of Automation of MIS
By Training Agencies

Training Agencies	Low	2	3	4	High
Local P-Sec.	12	8	12	31	35
Local Sec.	70	4	4	9	13
CETA	21	7	4	18	50
State Sec.	0	13	20	40	27
State P-Sec.	21	0	21	21	36
Administrators	33	9	6	20	30
MIS	19	4	17	27	33

(n = 106)

A majority (66 percent) of the local postsecondary interviewees saw their MIS system as being highly automated, while at the local secondary level 70 percent of those interviewed stated their MIS was operated manually. Sixty-eight percent of the CETA respondents rated their MIS systems as highly automated. At the state level secondary representatives (67 percent) and postsecondary representatives (57 percent) reported their MIS systems to be highly automated. Over 60 percent of the MIS staff interviewed felt their systems to be highly automated. Half the administrators gave their MIS the same rating.

In visits to the ten states it was learned that, two of them had no state regulating agency for proprietary schools. Five of the SOICCs used proprietary school information in calculating supply data. The most common reason cited for not using state generated proprietary school information is that it is not occupationally specific. Duplicate counting could occur between

CETA or vocational rehabilitation clients and the NCPS surveys. NCPS does not identify the funding source of individuals.

All of the RSA visited, except one, contract for all their training. The one RSA that does some of its own training has its data on trainees included in the planned SOICC supply report. Other supply data on RSA are reported by the training agency.

It was determined that duplication of count would be unlikely to occur with Job Corps, since it is an instructional provider and uses its own training centers. Some persons interviewed felt that Job Corps data should not be included in their report because most of the clients return to the state from which recruited on completion of their training.

Other Findings

The 300 individuals interviewed at the state and local level consisted of the following officials:

State Occupational Information Coordinating Committee Director
State Vocational Education Director
State Vocational Education MIS Director
State Vocational Education Planner
CETA Balance of State MIS Supervisor
HEGIS Coordinator
Director of the Regulating Agency for Proprietary Schools
Postsecondary Vocational Education Agency Head
Vocational Rehabilitation
Head of a Union, or Joint Labor Council

The research team also made trips to two secondary and two postsecondary vocational-technical schools or community colleges and two CETA prime sponsors conferring with the following individuals:

Secondary Vocational Education Director
Secondary MIS person
Postsecondary Vocational Education Director
Postsecondary Vocational Education MIS person
A major employer
A CETA Prime Sponsor Training Director
A CETA MIS person

Perceptions of Further Improvements in the OIS

Information generated by these interviews is analyzed and discussed earlier in this chapter. In addition to this information each of the persons interviewed was asked to state their

perception of further improvements which are needed to increase the effectiveness or efficiency of the data system in the state. The needs observed by the research teams will be discussed later in this chapter and are not necessarily the same as those identified by those individuals interviewed. Obviously, if responsible individuals see areas of improvement (real or imagined) in the state data system, this requires some action on the part of those responsible. The improvements identified by state and local personnel are summarized below. Responses were grouped into five categories and the number of states (out of ten) in which this need was mentioned is listed.

Needed Improvements Relating to Quality of Data:

- Timeliness of the supply/demand data - 7 states.
- Data do not show local supply/demand - 6 states.
- Identification of special needs students in VEDS report - 2 states.
- Local influence on data reported - 1 state.
- Compliance only reason for reporting - 1 state.
- Differences in data collection methods - 1 state.

Needed Improvements Relating to Procedures:

- Lack of uniform reporting definitions between local, state, federal - 9 states.
- Lack of coding and system uniformity between reporting systems - 9 states.
- Lack of communication and cooperation between state agencies - 8 states.
- Unrealistic reporting requirements - 5 states.
- Changing reporting requirements from year to year - 4 states.
- Mobility of students - 3 states.
- Lack of automation at local and state level - 9 states.
- Lack of feedback to local school from state agencies - 2 states.
- Duplication of reporting requirements between reporting systems - 2 states.
- Lack of use of data by decision makers - 2 states.

Needed Improvements associated with staff:

- Attitude, commitment, awareness of data by data reporters and users - 7 states.
- Local staff lack knowledge of procedures for reporting - 3 states.
- Staff turnover and shortages - 3 states.

Multiple Counting, Undercounting, General:

- o Training not reported - 7 states.
- o Student reported through two systems - 3 states.
- o Sources of supply not included in system - 3 states.
- o Privacy rights and laws - 2 states.

The improvements that providers and users of state and local data systems see as most important seem to fall into three general areas of need:

- o Need for improving quality of the data in terms of timeliness, local usefulness, and eliminating multiple counting and undercounting

- o Need for uniformity in definitions, coding, and procedures

- o Need for greater commitment and cooperation in improving the quality and use of data

Although some of the improvements identified by the individuals interviewed appear to be highly individualized and/or localized, the suggestions that were most commonly mentioned must be taken as indicative of a need. Whereas the study being reported here deals only with supply data from the sources identified, full utilization of information for effective planning is equally dependent upon the other factors mentioned as major problems. The following section of this chapter is a report of the major needs observed by the project teams visiting the states.

Needs Observed

Individuals conducting the research on improving the supply data that go into the occupational supply/demand system spent two weeks each in ten states. In addition to the interviews mentioned earlier, the investigation included the collection and review of data collection forms, completed forms, summarizations, and reports and observations in local schools and CETA Prime Sponsors. Team members were able to visualize the overall data system in the state, its individual components, the methodology and procedures used, and to get a "feel" for the setting in which the system operates.

Based on these observations and the individual interviews the team has identified the following areas for improvement:

- o Inability to secure data on the output of proprietary schools and other cases of undercounting and multiple counting
- o A lack of commitment to the use and improvement of the data system
- o A lack of cooperation and communication within and between agencies and local schools or agencies
- o A lack of uniform, clearly understood definitions and codes

The needs identified by the research team are not greatly different from those most often mentioned by the interviewees. Undercounting and multiple counting were widely recognized as concerns by those calculating supply numbers. The need for commitment to the collection and use of data and cooperation between agencies in this effort was also observed and stressed by interviewees. Uniformity of coding and definitions was a need identified through both observation and interviewing.

The Human Factor in Data-based Decision Making

As this research work in the states progressed it became increasingly obvious that undercounting and multiple counting are indeed critical issues that must be resolved; but the staff also realized that these problems could only be resolved in terms of the context in which the system operates. The team was struck by the almost universal skepticism about the quality of the data and the equally compelling and pervasive feeling of need for accurate, timely, and relevant information upon which to base decisions.

As complex as the counting problem is the researchers in the field were constantly nagged by a more generic and fundamental problem--the milieu in which data systems operate and decisions are made. This system is made up of a number of independent training operations each with its own MIS and decision making procedures. The ultimate objective-that of improving the quality and use of the occupational supply/demand information system--can only be fully achieved when all parts of the process mesh to produce information that improves decisions. In this section the research staff will attempt to set in some perspective the environment in the states as it was observed and to relate some recent writings in information theory to those state situations.

The need for relevant information that can be used in making decisions pertaining to occupational training is increasingly being recognized by state leaders. This development is triggered by (1) the rapid turnover of state leadership, which reduces the experience base, (2) the multiplicity and complexity of the decisions to be made, (3) the demand for accountability, (4) the many special groups with special needs, (5) the move toward individualism, and many other factors.

Society's perception of leadership and perhaps state training leadership's self-perception, is gradually changing from that of the leader who "shoots from the hip," "flies by the seat of his pants," and gives instant decisions to a decision maker relying heavily on relevant data. The effective leader is no longer perceived as a person expected to know everything but one who is able to balance the complex forces that impact on effective administration of programs. As in any such transition there will be individuals at all stages of change, from those still very doubtful of the data to those totally enamored with it.

As the use of data becomes more and more closely associated with intelligent decisions, there is a danger of those just discovering its usefulness becoming totally dependent upon and reactive to masses of data--any data. And so, we find decision makers gathering information they do not use, asking for reports they do not read, and acting and then requesting information to justify the act (Feldman and March, June 1981).

This image of information utilization contrasts dramatically with the view that information gathered for use in decision making will be used in making that decision and available information will be examined before more information is requested and gathered. However, to be realistic, it must be recognized that as the intelligent use of data for decisions becomes increasingly the symbol of effective leadership, some administrators will manage to assume the form, without being influenced by the substance.

This appearance of data utilization may result from many causes--objective decisions are not really wanted; managers do not know how to use data; politics, special interests or tradition are stronger; or there is a fear of losing decision making power. On the other hand, data are expensive to gather and analyze, data are often suspected of being inaccurate or manipulated, and problems may arise that were not anticipated. Yet organizations somehow survive and even succeed. Individuals develop rules for dealing with information under conditions of conflict. Decision makers discount much of the information that is generated. Not all information is ignored, however, and inferences are made (National Academy of Sciences 1979).

Just as in the change process, information seems to develop a force of its own. As the belief increases that more information characterizes better decisions so does the mass of information available become transformed, through practice, into functional necessity.

Environment for Information Generation and Use

Project staff spent two weeks in each of ten states interviewing providers, collectors and users of occupational supply data. The staff gradually began to realize that, as in all human endeavors, there was much more operating than the straight forward recording, analysis, and use of data. Human egos, fears, biases were involved. Turfism, tradition, politics, and vested interest were matched against a strong committment to cooperative solution of the states training needs. The whole gamut of human emotions were found to be affecting this process. This finding should not be surprising since humans are involved in every step of the accounting of individuals trained and available for work.

This recording of the fact that the process is influenced by human feelings and behavior should not be taken as a criticism of the system. Rather it should alay the fears of loss of individualism--"treating everyone as a number"--and emphasize the fact that the driving force behind the whole effort is to be better able to serve all individuals. This operation should, therefore, be viewed as a social process involving students, teachers, administrators, secretaries, computer operators, etc. It is not simply a problem of forms, computers, and reports. Administrators may have a much better grasp of this concept than do MIS people whose observable problems are usually more mechanical. The understanding that this is a people problem--people must fill in the forms, people must punch the buttons, people must take the jobs, people must make the decisions--as this is recognized our search for solutions becomes sharpened. The construction of forms, the processing of data are important but only as a means of making people better informed and helping them make better decisions.

The "push-pull" situation, found to some extent in all states, further illustrates the humanness and consequently the complexity of the problem. Interview notes are replete with these push-pull illustrations:

"If the data were better we would use them more"
"If the data were used more we could make them better"

"We already have more data than are used"
"There are never enough data"

"Those people who gather the data"
"Those people who use the data"

"The data have very few errors"
"The data are not reliable"

"Local employers can give us better information"
"Local employers do not care if we train too many"

"Those people at the state office"
"Those people at the local school"

"That's SOICC's job"
"That's OUR job?"

This section of the report has discussed some issues in addition to undercounting and multiple counting that the project staff felt to be important. As data collection and analysis methods become more sophisticated, so must the use of the information.

Perceptions of Factors Influencing Quality and Use of Data

The information presented in this section relates indirectly to undercounting and duplicate counting but is believed to impact on the quality of the data. Data are not created in a vacuum. They are developed by humans with varying degrees of education, training in data collection, and ideas about the importance, and use of data. All these affect the accuracy and the perceived accuracy of data. These findings are useful in understanding the environment in which data are collected. All numbers given are percentages and may not total 100 due to rounding. Identification of interviewee groups can be found in Appendix C.

Table 3.8

Perceptions of Degree of Data Accuracy by Interviewees

Interviewee Group	Inaccurate	2	3	4	Accurate	
Local Sec.	0	9	17	44	30	(n = 26)
Local P-Sec.	0	4	23	35	39	(n = 23)
CETA	0	3	10	47	40	(n = 30)
State Sec.	0	9	41	41	9	(n = 32)
State P-Sec.	0	13	27	47	13	(n = 15)
Administrators	0	10	24	37	29	(n = 70)
MIS	0	7	29	46	18	(n = 56)
Combined Sec.	0	9	31	42	18	(n = 55)
Combined P-Sec.	0	7	24	39	29	(n = 41)

Local secondary and postsecondary representatives appear to have more confidence in the accuracy of their data than state staff have. Both secondary and postsecondary rated their data accuracy high; 73 percent and 74 percent respectively. Fewer state level secondary and postsecondary personnel had confidence in data accuracy, 50 percent and 60 percent respectively rating it as highly accurate. CETA also rated their data quite accurate, giving accurate (4-5) an 87 percent rating. Nearly two-thirds of the administrators (66 percent) and MIS managers (64 percent) felt that their data were reasonably accurate.

Table 3.9

Level of Data Collection Priority by Interviewee Group

Interviewee Group	Low	2	3	4	High	
Local Sec.	4	21	29	25	21	(n = 24)
Local P-Sec.	0	4	19	35	42	(n = 26)
CETA	3	0	13	42	42	(n = 31)
State Sec.	0	13	22	52	13	(n = 23)
State P-Sec.	0	0	31	38	31	(n = 16)
Combined Sec.	2	17	26	38	17	(n = 47)
Combined P-Sec.	0	2	24	36	38	(n = 42)

By comparing overall responses, CETA gave the highest priority to data collection; 84 percent of CETA respondents rated it very high. Twenty-four percent of the postsecondary respondents felt data collection was a high priority as compared to 55 percent of the secondary respondents.

Table 3.10

Percent Indicating Program Funding Based on Data Submitted by Interviewee Group

Interviewee Group	YES	NO	
Local Sec.	67	17	(n = 2)
Local P-Sec.	100	0	(n = 6)
CETA	75	25	(n - 16)
State Sec.	85	15	(n = 13)
State P-Sec.	80	20	(n = 10)
Administrators	82	18	(n = 22)
MIS	77	18	(n = 17)
Combined Sed.	79	16	(n = 19)
Combined P-Sec.	83	17	(n = 12)

Funding for secondary and postsecondary vocational education program is influenced substantially by the data received from the local level. All local postsecondary representatives stated their vocational programs received funding on the basis of the data they submitted. At the state level, 80 percent of those interviewed said they funded programs based on data submitted.

Table 3.11

Percent Indicating Reports Sent to Local Agencies By Interviewee Group

Interviewee Group	Yes	No	
CETA	84	16	(n = 19)
State Secondary	100	0	(n = 26)
State Postsecondary	71	29	(n = 14)
Administrators	72	21	(n = 29)
MIS	88	9	(n = 32)

Respondents were asked if completed reports were returned to local agencies. The majority of respondents indicated that they sent reports to local agencies.

Table 3.12

Purpose of MIS Reports (Percent)

Interviewee Group	Plan.	Fund.	Prog. Dec.	Rpting	Needs Assess.	Eval.	Other	n
Local P-Sec.	85	65	58	96	23	27	46	(38)
Local Sec.	83	54	71	79	33	38	29	(32)
CETA	83	52	52	94	19	45	32	(49)
State Sec.	91	50	25	66	13	34	22	(43)
State P-Sec.	73	75	56	63	44	31	31	(46)
Administrators	86	49	52	71	20	34	43	(54)
MIS	76	51	40	68	26	28	23	(48)

Both secondary and postsecondary state agencies report that the major use of MIS data is mainly for planning. At the state postsecondary level 75 percent of those interviewed indicated the data are used for funding decisions. Over half (63 percent) of state postsecondary respondents indicated using MIS data for reporting purposes and (56 percent) reported use of MIS reports in making program decisions.

Local postsecondary representatives indicated the MIS reports used for reporting, planning, funding, and program decisions. Local secondary representatives used MIS reports for planning (83 percent); reporting (79 percent); and program decisions (71 percent). CETA's use of reports was for reporting (94 percent) and planning (83 percent).

When administrators and MIS managers were asked for what purposes MIS reports were used, eight out of ten identified planning; seven out of ten identified general reporting; nearly half identified funding and program decisions; and less than one-third identified using reports for evaluation and needs assessment.

Review

This chapter has presented findings of this study of supply data in the following areas:

- Problems and causes of multiple counting and undercounting
- A description of state reporting systems and individual perceptions relating to those systems
- Interviewee and project team members perceptions of problems in the reporting system
- A discussion of the human factors and the environment in decising making
- A presentation of characteristics of MIS staff's and individual views of the factors affecting the quality and use of data

The following chapter presents conclusions and recommendations emerging from the findings. A method of analyzing multiple counting problems is suggested and illustrated.

CHAPTER IV

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

This research project was designed to identify ways to improve the supply side of the occupational supply/demand data system being developed in the states. This data system will be the major source of information used to determine the need for training by specific job title. Use of the supply/demand data will be primarily for program planning (expansion, continuation, or termination), for counseling, and for program evaluation.

The study combined the following:

- A review of the relevant literature including research reports, laws, regulations, and forms relating to the federal and state reporting systems
- Interviews with 274 individuals involved in the production and use of data at the state or local level in ten states
- Interviews and conferences with agency representatives at the state and federal level and
- Observations in ten states and sixty local training institutions or agencies

Conclusions

Based on information produced through the steps outlined previously the project staff present the following conclusions for this study:

- Duplicate reporting of trainees does occur in numbers large enough to significantly influence supply data and decisions made on that data. CETA reports and VEDS reports both contain names of CETA trainees in regular vocational classes at both the secondary and postsecondary levels. Since neither party should be expected to reduce the numbers reported this becomes a state problem and can best be handled at that level. The VEDS report and the HEGIS report duplicate counts of postsecondary vocational students receiving a certificate or diploma. Plans to implement a uniform reporting base in NCES should help to correct this problem.

- Vocational education is the major provider of training for CETA clients in most states and for most prime sponsors. In a few instances CETA places significant numbers of its clients in proprietary schools or CBOs for training.

- Vocational educators take the position that some vocational funds are used in the training of CETA clients (building, equipment, and so forth.) therefore, they should be included in the VEDS report. No state was found that eliminated CETA clients in regular vocational programs from the VEDS report. VEDS reporting instructions ask for counts of students in programs supported by vocational funds (state plan programs) and in no instance do the instructions require the elimination of students supported by other funds.

- The development of an effective occupational supply/demand data system requires several years. The effective use of such a system may take even longer.

- Generally states require VEDS reports on any program receiving federal or state funds. This means that every approved vocational program is included in the state plan and the VEDS report, whether or not it receives any federal vocational funds.

- If a state requires the VEDS report on only federally supported vocational programs a school may (1) refuse the federal funds and not report on any programs, or, (2) designate only certain programs as receiving federal vocational funds and report on only those. Only one state in the ten studied had this situation.

- Proprietary schools are a major source of trained workers, which are not included in many of the state's supply/demand data systems.

- Training occurring in most secondary programs not traditionally considered to be vocational (industrial arts, typing, bookkeeping, and so forth) generally do not produce students available for a specific occupation in numbers great enough to be significant.

- Community colleges have a large number of students who only take one or a few courses needed for employment. Those compiling supply data should initiate procedures to include these individuals if they are prepared for a specific occupation or occupational group.

- Reporting systems, to be most effective in providing supply data, should be occupationally specific, use a unique individual number such as social security number, show numbers of completers available for a job, and report numbers placed by job title.

Recommendations

Improvement of Supply Data

1. Supply numbers should be based on number of trainees available for employment. If this information is not available some logical modification formula should be applied to other available data.

2. A major cause of undercounting is lack of data on proprietary schools. A state may (1) conduct survey of proprietary schools, (2) secure NCPS data from NCES, and/or (3) encourage state laws to require reporting of proprietary schools. It is recommended that SOICCs do the mailing of the Noncollegiate Postsecondary Survey, receive the responses back from schools, record completion data, and send material on to NCES.

3. Based on state differences major supply data sources should be as follows:

   VEDS - Secondary and Postsecondary
   CETA - Contracted Classes (if not reported in VEDS)
   Proprietary Schools data - NCPS

   Supplemental sources that should be considered are as follows:

   HEGIS - 2-year programs in 4-year institutions
   CBO - in instances where numbers are significant

4. CETA reports should be modified to include the type of institution providing the training and whether on an individual referral or contracted class basis.

5. Every effort should be made to use social security numbers to identify every individual receiving training in any federal or state funded program. This would facilitate the process of correcting duplicate counting.

6. Numbers of trainees missed through vocational programs that do not fill out federal reports, although not significant in most states, should be studied by the state agency responsible for calculating supply.

7. Secondary programs not usually considered vocational (industrial arts, typing, and so forth) should be investigated to determine if they constitute a significant source of trainees not being reported.

Improvement of Supply/Demand System

1. At the Federal level every effort should be exerted to establish one occupational coding system and one education-training program coding system. The NCES uniform reporting system is designed to partically elimnate this problem when implemented.

2. States should establish a policy of occupational training program approval or continuation based on occupational demand, student interest, acceptable placement levels, and other factors identified within the state.

3. As stated in the creating legislation the SOICC Committee should have principle responsibility for the production of a report which matches occupational supply against occupational demand.

4. The Occupational Employment Statistic (OES) program should continue to be expanded in order to provide occupational demand information in the states.

5. Officials at the state and federal levels should continue to investigate alternative ways of securing follow-up information. These might include sampling or use of existing data such as Unemployment Insurance, Internal Revenue, Social Security, or others.

6. State procedures should be established to ensure involvement of, and feedback to, local providers of data.

7. Research should be conducted to identify ways to increase the use of supply/demand data in state and agency program planning.

Analysis of Multiple Counting

It is recommended that the following series of questions be used to eliminate duplicate counting in supply calculations. Any agency faced with using training reports to calculate supply where duplicate reporting is suspected can work through these questions to reach a solution to the problem. An example of the use of the process is given at the end of this section.

In case of a trainee or program supported by funder other than the trainer the following questions should be considered:

Q. 1. Does the report from the funder and the report from the trainer both report individuals trained by specific occupation or occupational group?

Q. 2. What is the magnitude of this duplicate counting?

Q. 3. Can the trainer identify students supported (reported) by the funder?

Q. 4. Can the funder identify in its report students reported by the trainer?

Q. 5. What will be lost by not using trainers reports?

Q. 6. Can this loss be corrected in any other way?

Q. 7. What will be lost by not using funder reports?

Q. 8. Can this loss be corrected in any other way?

Q. 9. What are the alternative solutions?

Q.10. What is the most feasible alternative?

Example of analysis of multiple counting. (Vocational Education and CETA)

Table 4.1

ANALYSIS OF MULTIPLE COUNTING

QUESTION	ALTERNATIVE ANSWERS	CONCLUSIONS
Q.1. Does the re-report from the funder (CETA) and the report from the trainer (VEDS) both report individuals trained by specific occupation or occupational group?	A.1. Vocational education (VEDS) reports CETA individual referrals but not classes contracted for CETA trainees only. A.2. CETA reports all clients placed in training. A.3. If either CETA or vocational education does not report students trained by vocational education and funded by CETA no multiple counting is occurring. A.4. Both vocational education and CETA report by specific occupation or occupational group.	C.1. Multiple reporting does occur between VEDS and CETA. C.2. Ways must be found to avoid duplicate counting in supply data.
Q.2. What is the magnitude of this duplicate counting?	A.1. This multiple reporting is large enough to affect supply data. A.2. Multiple counting is too small to affect supply data. A.3. Multiple counting is only significant in certain occupations.	C.1. Multiple reporting involves numbers large enough to affect calculations of supply in those occupations for which CETA provides training.
Q.3. Can the trainer (Voc. Ed.) identify students supported (reported) by the funder (CETA)?	A.1. At the local level, probably yes. At the state level, probably no. A.2. If both agencies use social security numbers and records are computerized, duplication could be eliminated at the state level.	C.1. Since vocational educators consider that they are partially funding CETA training (facilities, equipment, and so forth), they are not likely to be willing to eliminate CETA students from their reports.

ANALYSIS OF MULTIPLE COUNTING

QUESTION	ALTERNATIVE ANSWERS	CONCLUSIONS
		C.2. The problem becomes one of unduplicating reports rather than reducing numbers reported.
Q.4. Can the funder (CETA) identify in its report students reported by trainer (VocEd)?	A.1. If CETA can report individual referrals separately from contracted classes a large amount of the duplication can be eliminated.	C.1. Use CETA report for numbers of students in contracted classes -- rest of CETA students from VEDS
Q.5. What will be lost by not using trainers (Voc. Ed.) report?	A.1. Not using VEDS would lose all vocational students.	C.1. Not feasible.
Q.6. Can this loss be corrected in any other way?	A.1. No, for secondary students. Possibly through HEGIS for postsecondary students.	C.1. No adequate method of correction.
Q.7. What will be lost by not using funder (CETA) reports?	A.1. CETA students trained in contracted classes. NOTE: Most states in the study reported that contracted classes only make up a small proportion of students and is decreasing.	C.1. A possible solution if no better alternative can be found.
Q.8. Can this loss be corrected any other way?	A.1. No.	C.1. Count would be reduced by number in contracted classes.

ANALYSIS OF MULTIPLE COUNTING

QUESTION	ALTERNATIVE ANSWERS	CONCLUSIONS
Q.9. What are alternative solutions to eliminate multiple counting.	A.1. Unduplicate count by matching social security numbers if available. A.2. Take contracted class count from CETA. All other from vocational education. A.3. Intermediate agency (SOICC) remove individual referrals from VEDS or CETA if either group can identify. A.4. Use only VEDS report.	

Analysis of alternatives to eliminate multiple counting between other reporting systems can follow the same procedure as the example above. Some general guidelines based on a majority of states studied are given in the following statements:

- A relative small number of individuals receive support for skill training through RSA.
- RSA refers the majority of its clients who need training to vocational education.
- Vocational education reports RSA trainees in VEDS.
- VEDS will include most RSA trainees.
- Community based organizations (CBOs) do some training of CETA clients. The number receiving occupationally-specific skill training is not significant in most state's supply calculations.
- Veterans Administration (VA) supports trainees in both vocational education and in proprietary schools.
- Vocational education reports those VA clients trained in VEDS.
- VA clients trained in proprietary schools would have to come from VA or proprietary reports.

- Duplication occurs between VEDS report and HEGIS report.
- HEGIS report contains enrollments and numbers receiving certificate or diploma.
- States are aware of, but only a few have used Noncollegiate Postsecondary Survey (NCPS) data.

Concluding Statement

As a concluding statement to this report the project team, in retrospect, found a very complex situation in each state. A situation involving many agencies operating at several levels, dedicated individuals struggling to prioritize the diverse needs and demands placed upon them, several reporting and planning systems largely operating separately, and a SOICC with no turf to protect and no programs to run, and beginning to establish an identity and a mission. There is no doubt about the desirability of coordination of the training effort. With so many highly competent and effective individuals operating, as would be expected, within their own world of endeavor, the necessity for individuals without boundries--SOICCs--who can build bridges between tne existing worlds, is critical. Effective coordination can start with an information system that communicates with all of the providers and funders of training; that grows into an organized cooperative program to meet the job preparation efforts of the state and nation. The highly idealized picture of a state and national occupational training program is no more than those persons needing and seeking training have a right to expect.

The information systems that can spark and guide this coordinated effort need not be one system; but if the several data mechanisms are to foster communication they must speak the same language. This need for uniformity of language, which seems so obvious and yet has proven to be so elusive, requires time, effort, and leadership at all levels -- local, state, and national. The achievement of this communication tool requires concessions to others, yielding of previously held positions, slaughter of some holy cows, and above all a determination to eradicate barriers and construct bridges of cooperation. It is time to get about the work of a unified determination of needs and a coordinated effort to provide the training to meet those needs.

APPENDIX A

LITERATURE REVIEW

Background

Chronic high unemployment has plagued the United States in the last decade. Some research efforts to understand this problem have concentrated on the characteristics and skills of the unemployed, and others have examined the job market itself and have revealed many unfilled jobs in the presence of high unemployment. Many causes are attributed to these seemingly contradictory phenomena. A major explanation is a lack of fit between the skills possessed by the workers and the skills desired by the employers. There is, all too often, a severe mismatch between the occupational skill level of the unemployed segment of the labor force and the available job openings in a specific labor market area. This condition, referred to as "structural unemployment," is real and widespread in large portions of the labor market.

Recent years have seen some response to the problem of structural unemployment. In order for training systems to fulfill their responsibility to individuals and satisfy requirements within the economic system, training institutions, human resource planners, policymakers, and economists must have current, accurate, comprehensive information about future demand requirements, about current supply and about future supply. Timely and accurate supply information will allow educators, human resource planners, counselors, program planners, and policymakers to make more accurate estimates of human resource needs and more informed decisions that could do much to ensure more efficient use of human resources and improved economic growth.

The elements of occupational supply are outlined in figure 1. Occupational supply is broken into three categories: (1) current supply, (2) entries, and (3) separations. The first category, current supply, consists of all persons employed in an occupation plus those unemployed who are both qualified and seeking work in that occupation. This category continually adjusts over time by entrants to and exits from the "supply pool."

The second category, occupational entries, has as its component parts five possible sources of entry into an occupation. These include specific designated entries for specific occupations. Completers and leavers from other general training programs; entries and transfers from other different occupations; reentries and new entrants from outside the labor force; and inmigrants, those workers who are qualified to enter an occupation and have moved into a labor-market area from another geographic area. These five components form the second category of

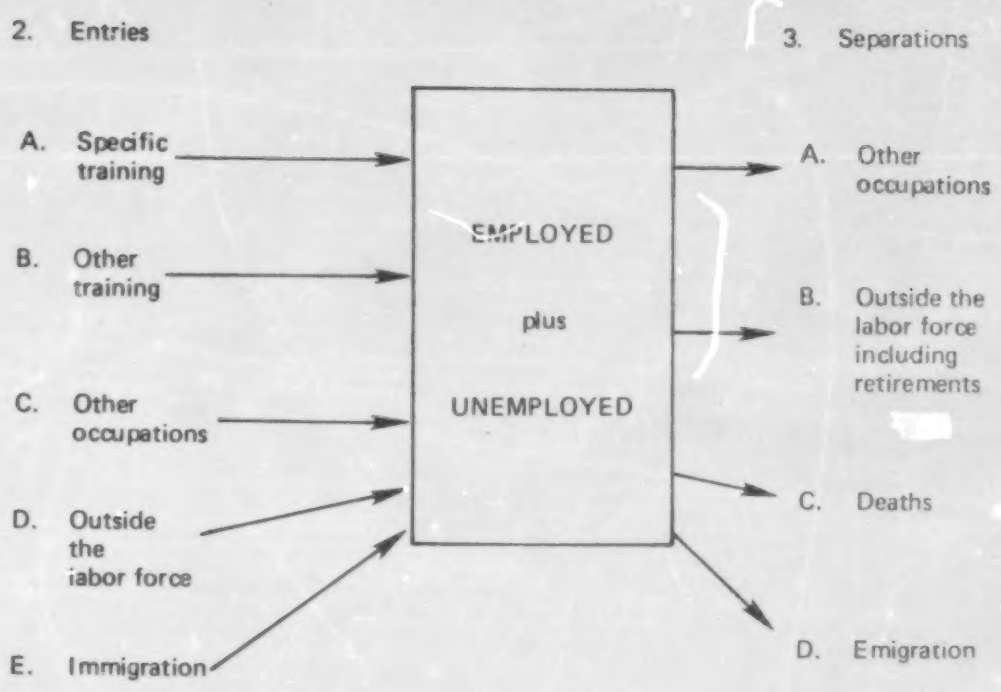

Figure A.1 Occupational Supply Model

occupational entries and create a flow into the stock of skilled individuals defined as current supply.

The third category, occupational separations, has four parts flowing out from the current supply stock. These parts include transfers to other occupations; individuals leaving the labor force, including disabilities and retirements; deaths; and emigration from a labor market area. In summary, the occupational supply model is a flow of entrants into and out of the current supply stock. The net change in current supply is entries minus separations. Because current supply and the data that reflect supply are derived from so many sources, the potential for miscounting, undercounting, and multiple counting in supply totals is a continuing concern.

Occupational Supply Information

Several studies have suggested that available occupational supply information lacks coherence and comprehensiveness. The monograph, Occupational Employment Projection for Labor Market Areas (1980), stated that in econometric forecasting and planning models little attention has been given to labor supply side. A publication titled Occupational Training Information in New England: An Evaluation noted that the provision of occupational supply information is considerably less advanced than that of occupational demand information.

Occupational entries or training sources that flow into current supply are only partially useful for occupational supply analysis. Data relevant to each of these sources are neither of uniform availability nor quality. In many cases the data are related to training curricula definitions and must be transformed to occupational definitions before they can be used in occupational supply analysis. Each of the components of occupational entries has its unique problems that serve to complicate the provision of occupational supply information.

Studies dealing directly with the occupational entries of training sources were found to vary on a continuum, "labor market/economic-oriented" or "educational/management information system-oriented." Most had as their base, a body of occupational information that attempted to support an analysis of the labor market and the fundamental problems caused by occupational supply-demand imbalances. Although these studies differed in emphasis, they stressed the need for a comprehensive, multifacted, timely, and accurate occupational supply information system.

Review of Occupational Training Information Available from Both Education and Non-Education Sources

This study investigates the current labor supply information system, the degree of undercounting and multiple counting occurring within that system, and the factors that affect this system's relationship to the overall occupational information system. Attention is focused on occupational entries, specifically those completers and leavers from formally organized training sectors. The study describes and assesses the available data from five major training sources: public vocational education (VEDS), higher education (HEGIS) and NCES Services, training under CETA (CETA-MIS), and training under vocational rehabilitation (RSA). Specific concern is with the counting of persons trained in five major training sectors and the problems related to that counting process.

In addition to the five major systems, other studies in the literature had various mixtures of the following information systems: State and National Apprenticeship Program Survey (SNAPS): U.S. Bureau of Apprenticeship and Training (BAT); American Hospital Association Survey (AHA Survey); National Guard; State Police Academies Job Corp; and employee sponsored training. No doubt, there are other sectors that could be included. For purposes of this study the five often studied and most prominent training sectors were chosen for review.

Public Secondary and Postsecondary Vocational Education (VEDS)

The development of the National Vocational Education Data Reporting and Accounting System (VEDS) was a major attempt to provide occupational information as called for in the 1976 Amendments to the Vocational Education Act of 1963. The comissioner of education and the administrator of the National Center for Education Statistics jointly developed a system that included information on vocational education students, programs, program completers and leavers, staff, facilities, and expenditures. In addition, each state was to evaluate those programs for which it receives federal funds. The state evaluation specifications pertained to employment in training related occupations and employer satisfaction with the employee. The VEDS system is to interface with the information system developed by NOICC and other (specifically CETA) information systems. With the implementation of the VEDS system in 1978-79, certain major changes in the availability and the concept of vocational education data were anticipated. The most important change was that of follow-up information that could provide meaningful estimates of incremental labor supply attributable to vocational education. In addition, programs could be evaluated vis-a-vis their labor market relatedness.

The annual reporting of statewide program enrollment completion data and certain follow-up information is required to qualify for federal vocational education funds. The data provided by the state vocational education agencies are compiled and published annually by the United States Office of Education. Although all states prepare the same federal reports, often each state has somewhat different procedures for obtaining the necessary information. These differences often include the use of individualized state forms, timing of the information gathering activities, and collection techniques. Therefore, the resulting information is not always comparable.

At both the secondary and postsecondary levels state and local administrations have expressed concerns about VEDS. The vocational education enterprise is so diverse that there is no common nomenclature. A study completed in Ohio (1975) noted that high rates of mobility for youths, both geographically and occupationally, make the follow-up data difficult to obtain or to draw conclusions from even the most carefully conducted longitudinal surveys. The recent InterAmerica (1981) assessment of VEDS methodology and data quality are looking at some of those previously identified areas of concern, including the degree of correspondence between VEDS definitions and state definitions, the identification of a state's ability to provide data related to each VEDS data requirement, and the overall quality and accessibility of VEDS data. In his testimony Rolf M. Wulfsberg (1980) of the National Center for Education Statistics, noted that many institutions because of state policy, institutional choice or other reasons do not report to VEDS. These institutions, although technically eligible to receive financial assistance under the VEA, do not. These circumstances outline another potential source of supply undercounting of trained persons.

Public Higher Education (HEGIS)

Pursuant to Title VI of the Civil Rights Act of 1964, and Title IX of the Civil Rights Act of 1964, and Title IV of the Education Amendments of 1972, all institutions that are involved with federal financial assistance to education are required to respond to the Higher Education General Information Survey (HEGIS), conducted by the National Center for Education Statistics (NCES) on those portions of surveys that collect race/ethnic data. All other HEGIS surveys are voluntary. The NCES established HEGIS in 1965-66. The HEGIS provides detailed data on enrollments, awards, faculty salaries, and finances of the approximately 3,300 institutions from which data are collected. A part of this is an elaborate program taxonomy of data on degrees and other formal awards conferred by institutions, including the level of the degree or other award. Award data are classified by type of degree or award, type of control (public or private), type of institution (university, other

four-year, two-year) curriculum category and discipline specialty. The data collected at the sub-baccalaureate level are the numbers of formal awards which are classified as either associate degree or as 'other formal recognition.' Enrollment data are published but not by field of study.

In order to estimate incremental labor supply from a training source to a particular occupation, it is necessary to estimate the rate of participation of program completers in that occupation. Since no follow-up data are available for programs in the HEGIS universe, additions to labor supply in individual occupations can only be roughly estimated. The New England Regional Commission (1978) noted that double counting between programs reported under postsecondary VEDS and HEGIS was known to occur. This problem occurs because some institutions of higher learning also receive vocational education funds, and, therefore, must also report under that reporting system. The New England Regional Commission (1978), noted several cautions in interpreting the program information and drawing final conclusions about the importance of specific training in these institutions. A substantial number of institutions did not return the completed survey in time for inclusion in the report. Therefore, those cases where an institution was delinquent, the "total award" information may be undercounted.

The HEGIS system has several limitations. The taxonomy and the program detail are too broad in some areas to relate to a reasonable number of occupations. In addition, the lack of any systematic collection of follow-up data seriously limits being able to estimate the rate of participation and additions to labor supply of program completers in varying occupations. The data collected pertain to the numbers of those persons receiving formal degrees or certificates and exclude persons who were trained but did not receive certificates.

The HEGIS reporting system does provide the occupational analyst with annual and reasonable timely information on occupational program completions in a large number of postsecondary institutions. It is a valuable resource of information, consistent in scope and quality from year-to-year, and comparable between states. The availability of this data for individual institutions makes the information useful for substate analysis.

Noncollegiate Postsecondary Survey (NCPS)

The majority of occupational programs and enrollments in noncollegiate postsecondary institutions is found in profit-making or proprietary schools. School licensing offices within most state education departments collect some training data from proprietary schools as a part of the license application and renewal procedure. These agencies usually are not able to produce

these data in a systematic and comprehensive fashion. In recent years some progress has been made in the provision of information concerning proprietary and other noncollegiate postsecondary institutions offering occupational training programs. Beginning, in 1971, the National Center of Education Statistics began surveying a universe of noncollegiate postsecondary schools with occupational programs. The survey is conducted every two years and the universe is continually supplemented with information from state directors of vocational education and other sources, such as licensing and accrediting commissions.

The unpublished data from the NCES survey provide information on the number of enrollments by program, and by institution. Programs are classified by U.S. Office of Education program code. Schools without occupational programs are eliminated from consideration. Institutions are classified by ownership; public, proprietary, independent nonprofit, or religious affiliation. Programs are coded based on the program title provided by the respondent.

In addition, NCES surveys a sample of the universe to gain more detailed information about students and completers. Although much of the information collected on the sample is identical to that collected on the universe, the addition of program completion data allows for more comprehensive national estimates to be made. Other information about length and cost of program and supplemental sources of funding are collected for national estimate purposes on a universe of noncollegiate postsecondary occupational programs, including proprietary schools. The data are available every two years and includes enrollments by U.S. Office of Education program code, by institution. In addition, national estimates based on a sample of the universe are made of other program characteristics including completions.

The user of NCES noncollegiate postsecondary data should be aware of certain instances where multiple counting between sectors occurs. Postsecondary data from the survey may also be accounted for in the vocational education reporting system.

As with graduates of institutions of higher education, no follow-up information is collected from graduates or leavers of occupational training program in noncollegiate postsecondary schools. The New England Regional Commission (1978) noted that this lack of information seriously hinders the ability of analysts to relate training to the labor market. Flinn, Scheer and Schmidt (1975) recommended that the state registration requirement for these private institutions be extended to include annual reports of enrollments, completions, and terminations by programs.

In summary, information on postsecondary, noncollegiate training is available from the National Center for Educational

Statistics. This institution-specific information is consistent in definition across states, and, thus, can be a valuable source of training data.

Classroom Training Offered by Comprehensive Employment and Training Act (CETA-MIS)

The enactment of the Comprehensive Employment and Training Act (CETA) of 1973 provided for vocational training and job placement on a decentralized basis to economically disadvantaged, unemployed, and underemployed individuals. The decentralized structure of the CETA program enables the actual administration of training programs to proceed at the local level. Units of local government such as cities or counties with a population of a hundred thousand or more are designated as Prime Sponsors with Balance of State provisions for less populated sections. The Prime Sponsors and Balance of State are responsible for the administration of the CETA programs within each state as well as being responsible for the collection and accuracy of the relevant program data. The CETA program activity exists in two forms, classroom training and vocational work experience.

The United States Department of Labor, Employment and Training Administration (ETA) is the federal agency that has the responsibility for distributing federal monies to the Prime Sponsors. ETA also supervises the collection of quarterly data relating to CETA program activity. These quarterly data produce a summary view of the general changes during the three month period prior to Prime Sponsor reporting. The most relevant information on labor market activity is the information on total enrollments, total terminations, participants enrolled, anticipated duration of job placement, and rehired workers. Again, this information would be more useful if it were occupation-specific.

Each Prime Sponsor has an established data collection system that is known as the Management Information System (MIS). An MIS specialist is assigned the tasks of collecting, editing, and processing the data related to local CETA activity. Types of information available from these Prime Sponsor systems, the level of system automation and sophistication vary considerably among Prime Sponsors.

Various limitations of the CETA data have been noted. A major deficiency is the lack of a comprehensive, standardized system for compiling information on the occupation-specific nature of CETA classroom training programs. Until recently, few, if any requirements exist for the reporting or routine compilation of occupation-specific training data. The variability in data availability among Prime Sponsors makes the use of the data for state or regional occupational training analysis in some

states difficult. The occupational training data extracted from each different Prime Sponsor's MIS is often extremely variable in detail and quality.

Most Prime Sponsors, to one extent or another, follow-up individuals served by the various CETA programs. However, in few cases does the follow-up produce information relating the specific occupational outcome of CETA's occupational training programs.

In summary, the lack of a standardized system for collecting and reporting information on CETA occupational training enrollments, completions, and occupational outcome severely limits the use of data available from individual prime sponsors. In addition the variation among prime sponsors of data availability and detail serves to limit their utility.

Training Through Vocational Rehabilitation (RSA)

One of the oldest and most comprehensive federal human resource programs is vocational rehabilitation. The origin of vocational rehabilitation is the Smith-Fess Act of 1920, which provided matching vocational education funds for training those disabled through industrial accidents. Since that time vocational rehabilitation has evolved into a comprehensive program, administered at the national level by the United States Department of Education, Rehabilitation Services Administration (RSA). This program consists of a variety of support services provided to clients, including vocational training, job development, placement services, and follow-up support to ensure adjustment to employment.

Services for vocational rehabilitation are available to the handicapped in all states. To qualify, the applicants must have a disability that interferes with their continued employment. The vocational rehabilitation agency in each state administers the vocational rehabilitation program in that state. In most cases, occupational training is not provided directly by the vocational rehabilitation agencies, rather it is provided indirectly by referral to training institutions.

The data collected by vocational rehabilitation agencies have been described as administrative in nature. This means that the data are intended for management, control, and evaluation uses, rather than for occupational information, human resource research, or planning. Of the data elements gathered, those most related to occupational information are the following: address reference, sex, work status before and after training, occupational title after training is completed, length of training program, outcome of services, and general information about type of training.

The primary source of problems associated with vocational rehabilitation data noted by the New England Regional Commission (1978) was that the data have not been available in a systematic fashion. The data are collected at the state agencies and forwarded to the national office of the RSA, where the data are used administratively. After the RSA finishes using the data, the magnetic tapes on which they are contained are returned to the various state agencies for reuse. The original, raw, or input data are never entered into an information system that would allow access by labor market analysts or other interested users at other levels.

Vocational rehabilitation's inclusion in the occupational information system takes the visible form of representation on each State Occupational Information Coordinating Committee. In addition, commissioners of the RSA designate a person from their staff to work with the technical steering group of the National Occupational Information Coordinating Committee. Since most training for RSA clients is done by another agency, the potential for multiple counting is great unless supply data are used only from the source of training.

Summary

The previous sections contained a discussion of training information for the five most common training sectors studied. This section will summarize the most commonly addressed problems, constraints, and recommendations regarding the vocational education and training system that are discussed in the literature.

A lack of consistency and coordination in the "system" of vocational education and training information permeates the literature. Several studies indicated anticipation of the development of NOICC and the SOICC as the possible remedy to this problem. There has not been an existing mechanism or process to coordinate the various component information systems of the different training sectors that could provide a unified, consistent reporting of data and information. In most instances, some data are available indicating the number of enrollments in, and/or the completion of, training programs. In many instances there is much available information, yet it varies considerably in the level of program and geographic detail and in the quality of reporting and editing. In many instances, multiple counting exists. Training data available for an occupational program offered by an institution in one sector is tabulated by two or more data collection agencies. However, the more global problem is the lack of a comprehensive follow-up of occupational program completers.

Several studies agreed that double counting occurs among the various training sectors. Duplication of count exists in the HEGIS Survey and the postsecondary VEDS. Less multiple

counting occurred between HEGIS and the NCPS Noncollegiate Postsecondary Survey. Some multiple counting did occur between the public portion of the NCPS Postsecondary Survey and the Postsecondary VEDS. It was frequently noted that multiple counting does exist between CETA-MIS and VEDS. Problems of inconsistency and undercounting were also discussed, even though the actual tracking and identification of data were more difficult to ascertain. These instances of multiple counting and undercounting among training data sources dilute the validity of the data produced.

A wide variety of constraints influence management information systems (Starr, Black, and Gray 1977). These nondata oriented constraints include inadequate staffing and staff training; noncooperation; lack of administrative support; misunderstanding of the MIS and its role; not enough organizational support and recognition of MIS; little time to make improvements in MIS; lack of staff trust of the MIS or the data; variations of fiscal years among local, state, and federal agencies; and political influence in personnel selection. Those data-specific constraints have included unclear or contradictory definitions, limited data access capability, poor computer center service, low priority status on computer, insufficient funds for MIS or data system improvement, and limited physical access to computer and data centers.

The most comprehensive recommendation suggested to correct this overall problem of multiple counting, undercounting, and the related constraints was the development of a formal mechanism for establishing reporting standards, the coordination of reporting systems, and the rationalization of the data. The conceptual origins and development of the NOICC/SOICC network have been a direct result of this felt need. This formal mechanism is an agency (ies) having the following characteristics: be institutionally neutral such that its responsibilities would not imply lines of authority or hierarchial status; recognize the mix of the public and private institutions involved; have the technical capacity to process educational and training information into supply estimates on a timely basis; and be in proximate relationship to sources of human resource requirements information in order that data demand and supply estimates be translated into policy or "choice criteria" for educators, administrators, policy analysts, labor-market analysts, and various decision makers. The fulfillment of these recommendations was seen as embodied in the development of the National Occupational Information Coordinating Committee (NOICC) and the State Occupational Information Coordinating Committee (SOICC) Network.

Congress and the executive branch of the federal government have long recognized the need to improve the quality and quantity of information about both labor demand and labor supply. They have reasoned that with the availability of more accurate occupational supply and demand information, the huge sums spent

on vocational education, higher education, training, and unemployment compensation could be more effectively utilized. The use of such information could create a better understanding of the occupations in demand, as well as those occupations for which there are a surplus of trained individuals or no demand.

In recognition of the need to improve occupational supply and demand information, Congress established in the Education Amendments of 1976 (P.L. 94-482) the National Occupational Information Coordinating Commmittee (NOICC) for each state. The NOICC and SOICC as discussed in A Framework for Developing an Occupational Information System (1979), are charged under this legislation with the facilitation and coordination of the development of an Occupational Information System (OIS) that has uniform definitions, standardized estimating procedures, and standardized occupational classification and reporting methodologies.

Given the specific responsibilities assigned to NOICC and the SOICCs, the states, as noted in the various preliminary reports of West Virginia (1980), Oklahoma (1980), Oregon (1980), Kentucky (1981), and others, have found it critically important to design their own subsystem and model of occupational information in direct line with the NOICC guidelines for development of labor supply models. The NOICC and the emerging SOICC network is charged with action at the national and state level to implement a comprehensive occupational information system.

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APPENDIX B

OVERVIEW OF FEDERAL LAWS AND REGULATIONS
PERTAINING TO DATA COLLECTION AND REPORTING

State Occupational Information Coordinating Committee (SOICC)

Congress mandated the establishment of the National Occupational Information Coordinating Committee (NOICC) and the State Occupational Information Coordinating Committees (SOICCs). The Education Amendments of 1976, P.L. 94-482, Title II, Vocational Education, Section 161 (b) (1) and (b) (2) mandated the establishment of NOICC. The legislation stated that the primary purpose of NOICC shall be as follows:

> To develop and implement an occupational information system to meet the common occupational information needs of vocational education programs and employment and training programs at the national, state, and local levels, which system shall include data on occupational demand and supply based on uniform definition, standardized estimating procedures, and standardized occupational classifications.

The State Occupational Information Coordinating Committees are charged with coordinating the necessary resources to develop and implement an Occupational Information System.

Vocational Education Data System (VEDS)

The Education Amendments of 1976, Public Law 94-482, Title II, Section 161 (a) legislated the development, implementation, and operation of a national vocational education data and accounting system. The legislation mandates that the commissioner of education and administrator of the National Center for Education Statistics be given joint responsibility for development of the system's information elements and uniform definitions and to provide for the uniform reporting from the states. It is mandated that the system be compatible with the Occupational Information System (OIS) being developed through SOICC and other information systems involving data on programs assisted under CETA of 1973.

VEDS forms include the following:

NCES 2404 -- Program Enrollment and Termination Report. This form requires separate reporting for secondary and postsecondary. The form has three parts:

Part A--reports information on occupational preparation, enrollments, and terminations which may be included in the

follow-up. Information is by six-digit OE code programs. Information includes:

- o unduplicated count of total instructional program enrollments during th reporting year;
- o unduplicated total counts of program enrollments by racial/ethnic group by sex;
- o unduplicated enrollment counts by program level;
- o enrollment data on short-term adults;
- o unduplicated counts for enrollments with special needs (handicapped, limited-English proficiency, disadvantaged);
- o unduplicated count of enrollments in cooperative vocational education;
- o unduplicated counts of students who complete, transfer from, or leave a program for any reason during the reporting year.

Part B--reports on program enrollments and terminations for whom there will be no follow-up. Separate reporting categories include--

- o occupational preparation for those below eleventh grade enrolled in occupational preparation programs, enrollees in courses prerequisite to a six-digit OE code program, or a program or activity that leads to more than one six-digit OE program,
- o consumer and homemaking programs,
- o industrial arts programs.

Part C--reports on the instructional settings of handicapped enrollments.

NCES 2404A--Postsecondary Program Enrollment and Completion Report. This form aggregates data at the state level by institutional type (stream) on annual cumulative student enrollments and completions in postsecondary programs of vocational education. There are five parts to the form:

Part A--provides information on enrollments and completions who may be included in the follow-up. Information is reported by either six-digit OE code or four-digit HEGIS classification when six-digit codes are not available. Information includes--

- o unduplicated count of total vocational program enrollments during the reporting year;
- o unduplicated total counts of vocational program enrollments by racial/ethnic group and by sex;
- o vocational program enrollment data for those students with special needs;
- o unduplicated counts of those students who complete program during the reporting year.

Part B--reports other vocational and support program enrollments for--

- o occupational preparation programs for those enrolled in an area of vocational education at the two-digit level of specificity,
- o consumer and homemaking programs,
- o industrial arts programs.

Part C--reports special needs enrollments in Parts A and B by type of instructional setting.

Part D--provides unduplicated reporting of enrollments in parts A and B who are participating in co-op vocational education and apprentice programs.

Part E--provides enrollments who benefit from work study, support services for women, day care services, vocational education for displaced homemakers, and consumer and homemaking vocational education programs in economically depressed areas.

NCES 2404-1--Teacher Staff Report. This report is separated by secondary and postsecondary data. The report aggregates data at the state level on staff assignments in vocational education. NCES 2404A-1 is the postsecondary version of this form.

NCES 2404-2--Financial Status Report. This report provides information on expenditures of vocational education funds.

NCES 2404-7--Completer/Leaver Follow-up This report requires separate reporting for secondary and postsecondary. This defines the follow-up universe from NCES 2404. It includes an employer universe of those individuals who indicated being employed in fields related to their vocational training. States are required to use a minimum sample of 20 percent. NCES expects a reasonable response rate.

Part A--aggregate report of the employment status of the follow-up sample by instructional program by completers, leavers who complete more than 50 percent of the program and summary of leavers who complete at most 50 percent of the program.

Part B--aggregate of the follow-up employment status by racial/ethnic designation.

Part C--aggregate of the follow-up employment status of handicapped completer/leaver.

Part D--reports the fields of employment for completer/leaver follow-up and average hourly salary by instructional program. Each form will be assigned a two-digit SOC code based on individual's employer job title, and job duties.

NCES 2404A-7--Postsecondary Completer/Leaver Follow-up Report. This report is due one year after submitting NCES 2404A. Data on vocational education programs are identified by streams. They define the follow-up universe as consisting only of the completers who can be identified with a specific six-digit vocational education program, and leavers who did not return to enroll in two consecutive semesters or three consecutive quarters or who notify the institution of their intent not to enroll again prior to program completion. The report includes an employer universe of the employers of individuals who indicated that they were employed in fields related to their vocational training.

NCES 2404-8--Employer Follow-up. This report summarizes the information results from Employer Follow-up forms. It reports results by instructional programs, by racial/ethnic/sex designation, and by program level/completion status of students on whom data were reported.

Part A--reports findings by instructional program.

Part B--reports findings by racial/ethnic/sex designation on those reported in part A.

Part C--reports findings by program level and completion status.

The secondary forms report data on vocational education for which credit is given toward a high school diploma. The postsecondary forms report data on vocational education from three streams: regionally accredited institutions (i.e. HEGIS schools); state approved institutions (generally area vocational technical institutes or institutions established by state law or policy); and other postsecondary institutions. Each stream requires a separate form.

Comprehensive Employment and Training Act (CETA)

Public Law 95-524, the CETA Amendments of 1978, calls for the governor's coordination and special services activities to include the coordination of all employment and training education and related services by providers of these services within the state; and the exchange of information between states and prime sponsors with respect to state, interstate, and regional planning for economic development, human resource development, education and other subjects relevant to employment and training planning. The CETA Amendments require evaluative information on enrollments, completions, job placements, and training related placements for clasroom and OJT programs.

CETA is administered by the Employment and Training Administration of the United States Department of Labor. ETA provides funds to prime sponsors to conduct CETA activities.

Quarterly and annual reports sent to the regional offices include the following:

1. Quarterly Summary of Participant Characteristics (QSPC), provides detailed information on the socioeconomic characteristics of participants. For the categories, total participants, total terminations, and for the total number of participants who entered employment the following is reported: sex, age, education, economic status

family status, race/ethnic group, veteran category, and labor force status. For those clients who entered employment hourly wages prior to CETA participation and hourly wages after CETA participation are reported. This is reported by the prime sponsor on a quarterly basis for each CETA title.

2. CETA Program Status Summary (CPSS), provides aggregate information on the outputs of CETA programs on a quarterly basis.

   Section I: Reports information on enrollments, terminations, and some limited information on post program employment status and expected duration of job placement.

   Section II: Reports information on the numbers enrolled by CETA program activity (e.g. classrom training, on-the-job training, public service employment, and work experience).

   Section III: Reports information on significant segments, both planned and actual.

3. The Annual CETA Program Activity Summary (PAS), reports the outcomes of CETA program terminees according to the program activities in which they participated and whether they participated in a single activity or in multiple activities. Reports aggregate numbers of participants who entered public or private sector employment, those who entered the armed forces, returned to or continued full-time school.

4. Annual Report of Detailed Characteristics, reports by race/ethnic group by sex the following information: age, education status, public assistance status, economic status, family status, and veteran status.

5. Annual Report of Training Enrollments and Completions (this report becomes a CETA reporting requirement during FY 81 and will be due in November of 1981). Occupational Classifications are made using either nine-digit DOT or four-digit SOC codes (not both in the same report). Activities that cannot be coded to that level of detail are coded to the finest level of detail possible. Classroom training

reports enrollments and completions in occupational skills operated by the prime sponsor or contractor.

On-the-job training reports enrollments and completions.

All CETA Prime Sponsors and Balance of States (BOS) report that forms required by the U.S. Department of Labor are completed. This information is sent to each of their respective regional offices. No other data on participants or programs were collected except the data necessary to comply with federal requirements. All CETAs collect data by individual participant. Seven of the states report a system using individual participant social security numbers to avoid double counting within the agency. Only a few of the CETA agencies state that they have the capability to determine if a client is an individual referral or in a group referral without making changes in the reporting system. This information is on the individual records, but is not coded for access.

Higher Education General Education Survey (HEGIS)

A Taxonomy of Instructional Programs in Higher Education/ The Higher Education General Information Survey (HEGIS), authorized by law (20 U.S. Code 1221 e-1), was established in 1966-67. Data are to provide comprehensive institutional-based information on the status of postsecondary education in the United States. The nationwide system is a mandated responsibility of NCES. NCES collects, edits, analyses, and disseminates data on the nation's public and private colleges, universities and community colleges.

Several forms and some surveys are conducted annually, others are conducted less frequently.

- Institutional Characteristics of Colleges and Universities (annual).
- Fall Enrollment and Compliance Report (annual).
- Financial Statistics of Institutions of Higher Education (annual).
- Upper Division and Postbaccalaureate Enrollment (annual).
- Degrees and Other Formal Awards Conferred (annual).
- Employees in Higher Education (part annual and part biennial).

- o Inventory of College and University Physical Facilities (periodic).

- o Adult Continuing Education (periodic). o Residence and Migration of College Students (periodic).

Instructional programs are coded with a unique HEGIS coding taxonomy. Information includes the following:

1. Programs of two or more years, but less than four years by sex and racial/ethnic data.

   a. Associate degree.
   b. Other formal recognition (without associate degree).

2. Programs of at least one year, but less than two years, by sex, racial/ethnic data.

Vocational Rehabilitation Management Information System

The Rehabilitation Act of 1973, Public Law 93-112 authorizes grants to assist states to meet the current and future needs of handicapped individuals. In order to participate a state must submit a state plan for vocational rehabilitation services for a three-year period and may be required to make annual revisions in the plan upon the request of the RSA commissioner.

Statistical reporting under the federal-state program of vocational rehabilitation is sponsored by the Rehabilitation Services Administration (RSA) and conducted under the auspices of the National Center for Social Statistics (NCSS) acting as the collecting and processing agency for RSA sponsored reports.

RSA specified what information will be collected and at what points in the service-delivery process. States have the option of using the SRS-RSA-300 form or can collect the specified information in a manner compatible with their data system.

Occupations of vocational rehabilitation clients are recorded at the time of case closure. The occupational coding structure is based on the DOT code. Generally the first four digits of the six-digit code are used.

NCES 2358-1. Survey of Programs and Enrollments Postsecondary Schools, Correspondence Schools Only. Information includes by occupational program or field of training: total number of required responses; average number of months to complete program; average number of hours to complete program; if resi-

dential requirements; number of hours required; total required tuition and fees; number of students ever enrolled in year; and number of students completing the program.

Schools are further classified by the type of control of the institution. Public schools are those controlled by federal, state, or local government. Private schools are those operated either as a proprietary (profit making) school or as an independent, nonprofit making school. Correspondence schools are classified by type.

Three forms are used: NCES 2358; NCES 2358-1; and NCES 2358-2. Approximately 80 percent of the universe of schools receive the one-page survey form (NCES-2). NCES 2358 is a long form survey sent to the remaining 20 percent of the schools selected by random stratified sample. The third form (NCES 2358-1) is sent to correspondence schools.

NCES 2358-2. Survey of Programs and Enrollments, Postsecondary Schools and Career Schools. Information includes by program: number of enrollments by sex, number of completions by sex, full or part-time status of enrollees.

NCES 2358. Survey of Programs and Enrollments Postsecondary Schools. Information includes that on 2358-2 (by program) in addition to the length of the program, number of hours per week of required attendance for full-time enrollees, total charges to complete the program (tuition, books, supplies, the and so forth), number of leavers before completion with marketable skills by sex, the number of program dropouts by sex, the number of continuations or the number who are still enrolled by sex.

Noncollegiate Postsecondary (NCPS)

The National Center for Education Statistics (NCES) is responsible for a biennial survey of all public and private noncollegiate postsecondary schools offering one or more occupational programs intended to prepare individuals for a specific career. Noncollegiate postsecondary schools are surveyed in even numbered years to obtain enrollment and completer/leaver information.

The noncollegiate schools are classified according to the following types of occupational programs offered:

Vocational-Technical
Technical Institute
Business/Commericial/Office
Cosmetology/Barber
Flight School
Trade School

Arts/Design
Hospital
Allied Health

(Schools not classified in the these groups include schools of modeling, brewing, maritime occupations, and horsemanship.)

Job Corps

Job Corps is mandated by Public Law 93-203, Comprehensive Employment and Training Act, Title IV and amended by Public Law 95-524. Job corps provides intensive programs of education, vocational skills training, work experience counseling, and health services on a resident or nonresident basis. The centers are targeted to disadvantaged young people, between the ages of sixteen and twenty-two who are out of work or school and who need additional skills.

Job Corps uses three forms to collect data; Job Corps Data Sheet, semiannual Vocational Status Report, and an individual follow-up report.

The Job Corps Data Sheet is an intake form that is completed for each individual. It screens applicants for eligibility and collects background and personal characteristics information.

The semiannual Vocational Status Report, reports vocational training programs by Job Corps cluster and by six-digit DOT code. Information reported is the source of instruction (e.g. center staff, contractor, union, college); the number of enrollees in center/off center and by sex; total enrollment; and number of completions of Job Corps training.

The follow-up report is completed for every leaver regardless of completion, if that member can be located Information includes; geographic area, Job Corps identifiers for the vocational training program completed, job title and type of job obtained, the DOT code for the occupation of placement, and the relationship of employment to training program.

Reports on enrollments and the Vocational Status Report are sent to the regional office. The regional office does the follow-up report and it is not returned to the Job Corps center. The follow-up reports are sorted by the home state of the Corps members.

APPENDIX C

RESPONDENT COMBINATIONS

In analyzing the quantitative data collected, respondents were aggregated by title into various groups. The various combinations are listed as follows:

State Secondary:

State director of vocational education
State MIS director, vocational education
Vocational education planner

State Postsecondary:

Postsecondary head
HEGIS coordinator

CETA:

All CETA respondents

Local Secondary:

Vocational education director
Vocational education MIS

Local Postsecondary:

Vocational education director
Vocational education MIS

Administrators:

State director of vocational education
SOICC
Postsecondary head
Vocational renabilitation
Local secondary vocational education director
Local postsecondary vocational education head
CETA prime sponsor training director

Management Information Systems:

State vocational education MIS
Planner, vocational education
HEGIS coordinator
CETA balance of state MIS
Local secondary vocational education MIS
Local postsecondary vocational education MIS

Combined Postsecondary:

HEGIS coordinator
State postsecondary head
Local postsecondary vocational education head
Local postsecondary vocational education MIS

Combined Secondary:

State director of vocational education
State vocational education MIS
State planner, vocational education
Local secondary vocational education director
Local secondary vocational education MIS

APPENDIX D

STEERING COMMITTEE

National Occupational Information Coordinating Committee

Dick Dempsey
Jim Woods

National Center of Education Statistics

Curt Baker -- HEGIS
Lynn Kay -- Postsecondary Survey
Bob Morgan -- VEDS

Rehabilitation Service Agency

Patricia Nash

Comprehensive Employment and Training Act

Bob Beasley
Lec Kouters -- Pennsylvania

Job Corps

Gene Sullivan

State Vocational Education

Tim Campbell -- Florida

State Occupational Information Coordinating Committee

Mark Schaff -- Ohio
Jeffrey A. Windom -- Virginia

Bureau of Labor Statistics

Brian MacDonald
Peter Ward

Office of Vocational and Adult Education

Kent Bennion
Bernie McAlpine

APPENDIX E

INTERVIEW GUIDE

Concept: Double Counting/Under Counting

8 ☐ Don't Know
9 ☐ Not Applicable

Variable		*Questions*	*Response*
Funding	01	Do you have students in programs that are supported by more than one funding source?	(10) 1 ☐ Yes 2 ☐ No If yes, ask next question.
	02	What are these sources?	(11) 1 ☐ CETA (12) 2 ☐ BEOG (13) 3 ☐ Rehab (14) 4 ☐ VETS (15) 5 ☐ WIN (16) 6 ☐ Voc. Ed. (17) 7 ☐ Other (Specify)
	03	How many reports are made on each of these students?	(18) 1 ☐ 1 2 ☐ 2 3 ☐ More
	04	To whom are these reports sent?	(19) 1 ☐ CETA (Regional) (20) 2 ☐ Voc. Ed. (State) (21) 3 ☐ Dept. of Ed. (VEDS) (22) 4 ☐ NCES (23) 5 ☐ Other agencies (Specify
	05	What is your estimate of students that may be double funded?	(24) 1 ☐ 0-25% 2 ☐ 26-50% 3 ☐ 51-75% 4 ☐ 76-100%
	06	From whom do you receive funds for programs?	(25) 1 ☐ Federal (26) 2 ☐ State (27) 3 ☐ Local (28) 4 ☐ Other (Specify)
Automation	07	How automated is your MIS system?	(29) 1 ☐ Low 2 ☐ 2 3 ☐ 3 4 ☐ 4 5 ☐ High

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Variable		*Questions*	*Response*
Reports	08	What reports are used to calculate supply?	(30) 1 ☐ CETA (31) 2 ☐ HEGIS (32) 3 ☐ Employment Services (33) 4 ☐ Vocational Education Reports (VEDS) (34) 5 ☐ Proprietary School Reports (35) 6 ☐ Other (Specify)
Interaction	09	How frequently do you interact with other agencies' MISs within your state?	(36) 1 ☐ Daily 2 ☐ Weekly 3 ☐ Monthly 4 ☐ Less Frequently
Agency Control	10	How great a priority is data collection?	(37) 1 ☐ Low 2 ☐ 2 3 ☐ 3 4 ☐ 4 5 ☐ High
	11	Does your data have any impact on your funding level?	(38) 1 ☐ Yes 2 ☐ No
	12	How much pressure does your system place on you to do accurate and complete reporting?	(39) 1 ☐ Low 2 ☐ 2 3 ☐ 3 4 ☐ 4 5 ☐ High
	13	How much control do you exert on local schools to do accurate and complete reporting?	(40) 1 ☐ Low 2 ☐ 2 3 ☐ 3 4 ☐ 4 5 ☐ High
	14	What kind of control does the state have on the local school to get reports?	(41) 1 ☐ Laws or Regulations (42) 2 ☐ Funding (43) 3 ☐ Persuasion (44) 4 ☐ Other (explain)
	15	Is there a problem in getting reports?	(45) 1 ☐ Yes 2 ☐ No

Variable		*Questions*	*Response*
	16	(State) Do you fund local programs on the basis of the data they submit?	(46) 1 ☐ Yes 2 ☐ No
Data Quality	17	How accurate do you feel are your data?	(47) 1 ☐ Inaccurate 2 ☐ 2 3 ☐ 3 4 ☐ 4 5 ☐ Accurate
	18	Is your student data individualized or aggregated?	(48) 1 ☐ Individualized 2 ☐ Aggregated 3 ☐ Both
Evaluation Uses	19	For what purpose are the MIS reports used?	(49) 1 ☐ Planning (50) 2 ☐ Funding (51) 3 ☐ Program decisions (52) 4 ☐ Reporting (53) 5 ☐ Needs assessments (54) 6 ☐ Evaluation (55) 7 ☐ Other (explain)
Reporting	20	(Local) Who is responsible for doing the reporting?	(56) 1 ☐ Teachers, Counselors (57) 2 ☐ Students (58) 3 ☐ Administration (59) 4 ☐ Clerical (60) 5 ☐ Other (explain)
Staffing	21	How many years have you had this MIS job?	(61-62) 01 ☐☐ One year or less ☐☐ Number of years
	22	How many years in related training?	(63-64) 01 ☐☐ One year or less ☐☐ Number of years

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Variable		*Questions*	*Response*
	23	How much turnover has occurred in the MIS staff over the past 5 years?	(65) 1 ☐ None 2 ☐ Low 3 ☐ Medium 4 ☐ High
Dissemination	24	Do you send any of the completed reports to local agencies?	(66) 1 ☐ Yes 2 ☐ No
	25	Do you receive any of the completed reports from the state?	(67) 1 ☐ Yes 2 ☐ No
	26	Who gets these reports?	(68) 1 ☐ Teachers (69) 2 ☐ Superintendent (70) 3 ☐ Local Vocational Director (71) 4 ☐ Agency Head (72) 5 ☐ Other (explain)